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A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)

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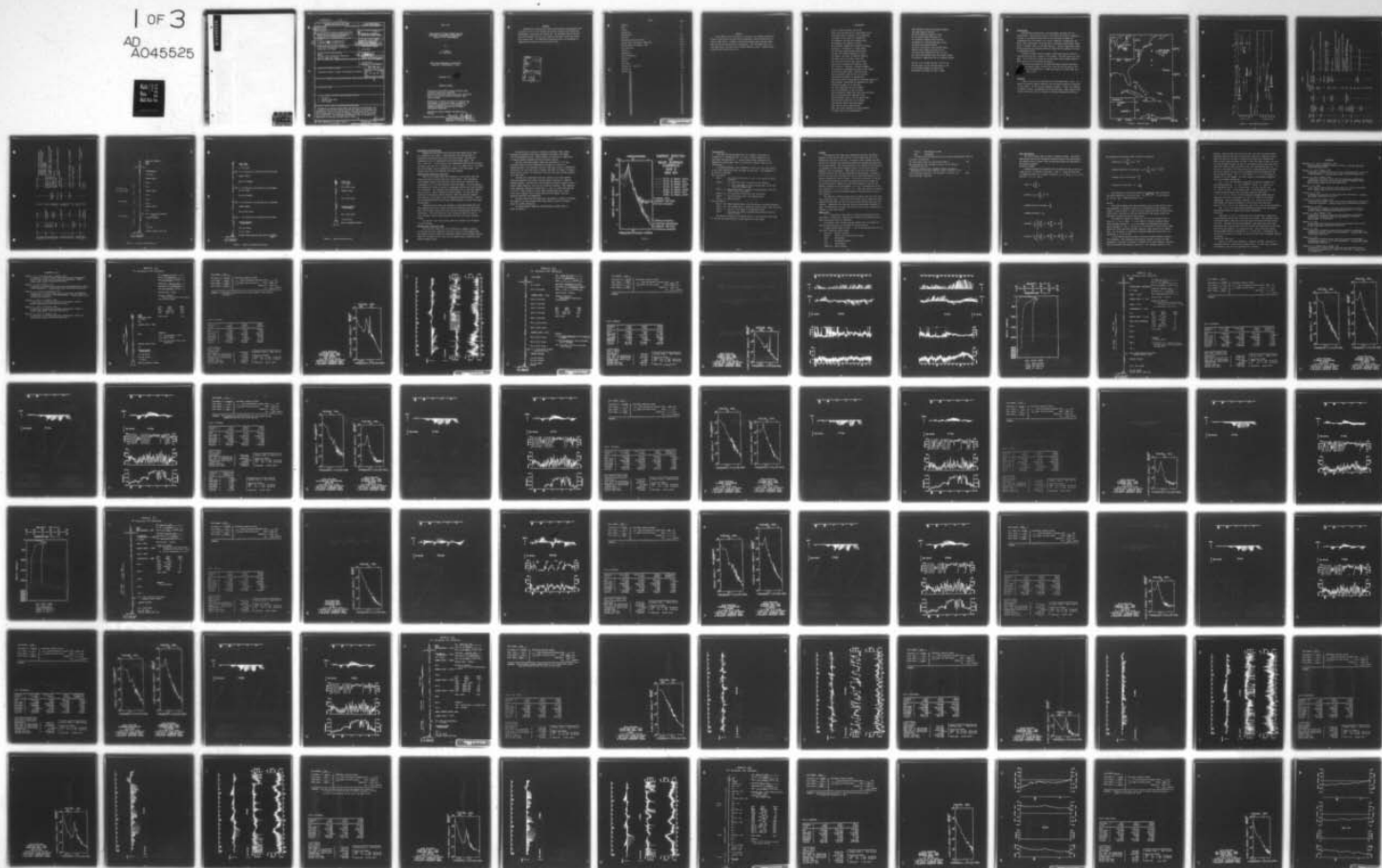
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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER 14 WHOI-77-56 ✓	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) 6 A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPHIC OBSERVATIONS. VOLUME XV. (1971 MEASUREMENTS).		5. TYPE OF REPORT & PERIOD COVERED 9 Technical <i>rept.</i>
7. AUTHOR(s) 10 S. Tarbell A. W. Whitlatch		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Woods Hole Oceanographic Institution Woods Hole, MA 02543		8. CONTRACT OR GRANT NUMBER(s) N00014-69-A-0200-6006 S10 N00014-67-A-0204-0048 MIT N00014-66-C-0241 STAR 28034
11. CONTROLLING OFFICE NAME AND ADDRESS NORDA National Space Technology Laboratory Bay St. Louis, MS 39529		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS NR 083-004
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE 11 Sep 1977 1977
		13. NUMBER OF PAGES 842 221 p.
		15. SECURITY CLASS. (of this report) Unclassified
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE DDC REFORMED OCT 13 1977 B
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) 1. Moorings 2. Current Meter Data 3. Gulf Stream		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Summaries of moored current meter and associated oceanographic data collected in 1971 in the Atlantic and Pacific Oceans by the Woods Hole Oceanographic Institution are presented. The averaged current and wind data are presented as statistics, spectral diagrams, vector and scalar plots versus time. The associated hydrostation data are presented as temperature and salinity plotted against depth.		

WHOI-77-56

A COMPILATION OF MOORED CURRENT DATA AND
ASSOCIATED OCEANOGRAPHIC OBSERVATIONS
VOLUME XV (1971 MEASUREMENTS)

by

S. Tarbell
A. W. Whitlatch

WOODS HOLE OCEANOGRAPHIC INSTITUTION
Woods Hole, Massachusetts 02543

September 1977

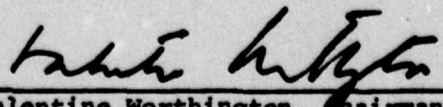
TECHNICAL REPORT

*Prepared for the Office of Naval Research under
Contracts N00014-69-A-0200-6006;
N00014-67-A-0204-0048; N00014-66-C-0241; NR 083-004
and for the National Science Foundation under
Grant GA-28034.*

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Valentine Worthington, Chairman
Department of Physical Oceanography

ABSTRACT

Summaries of moored current meter and associated oceanographic data collected in 1971 in the Atlantic and Pacific Oceans by the Woods Hole Oceanographic Institution are presented. The averaged current and wind data are presented as statistics, spectral diagrams, vector and scalar plots versus time. The associated hydrostation data are presented as temperature and salinity plotted against depth.

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PREFACE

This volume is the fifteenth of a series of Data Reports presenting moored current meter and associated oceanographic data collected by the W.H.O.I. Buoy Group. Volumes I through XIV present data from the years 1963 to 1970 plus three special experiments: the 1973 IWEX array, the 1973 MODE array, and data from a tracked mooring in 1976. Volume fifteen presents data from the year 1971.

RECOGNITION

A lot of hard work and a lot of fun
That is the way the W.H.O.I. Buoy Group is run.
From great fantail cookouts on a moving ship
To braced in your bunk on a stormy trip
Or slapped on the back by a passing wave,
As struggling you maneuver to save
An instrument crammed with moored data galore.
Inertial?? Internal?? or a tidal bore?
The data when gathered must then be read.
So into the various computers it's fed.
The output, our data, is handled carefully
And given to you, we hope, error free.
Our scientists then do what they do best.
They look at the data and dream up a test
For a theory, a question, a passing thought
To advance our knowledge past what is now taught.
Each mooring array needs a special design
So the engineers plan and set up the line.
Each meter is placed in a special spot
And the flotation is balanced so the anchor moves not.
The settings, retrievings and measuring of lines
Operations handle all of the time.
For each experiment they also prepare
All of the hardware we use out there.
The instruments tweaked with much class and skill
By our technicians are improving still.
Each technical trick in its own special way
Provides better data for us to display.
This present report then does depend
Upon the efforts of women and men
Who, each, with attention to minute details
Do their best so the data prevails.

This fifteenth report was prepared capably
With Mary Raymer's ability
And also particular thanks are due
To our typist Audrey Williams too.
Our financial support comes from ONR
To measure the currents from near or far.
And additional funds from NSF
To prove a scientist's well thought guess.
Without their support we would not be
Nor would have gathered the data you see.
Nor would have advanced past the present bounds
Of duration, temperature and our stomping ground.

There's a lot of hard work and a lot of fun
But the secret of how the Buoy Group is run
Is good humor abiding on every floor.
With humor, our labor is never a chore.

Introduction

New mooring locations and a new instrument type mark 1971 as a special year. Data from two areas in the Pacific as well as a selection of sites in the western North Atlantic were recorded by Model 850 instruments built by Geodyne (now a part of Edgerton, Germeshausen and Grier) and by prototypes of the new Vector Averaging Current Meter (VACM) built in Waltham, Mass. at the EG&G facility. Another significant change was the decision to gradually modify all Model 850 instruments to include a temperature sensor.

Displays of data location (Figure 1) and data duration (Figure 2) indicate what data are included in this report. The data shown are 'good' data. Good is defined to mean time series which have no known errors or whose errors have been removed by editing.

Data from instruments in the MODE (Mid-Ocean Dynamics Experiment) area (200 km radius around 28° 00'N, 69° 10'W) are not included in this report but will be presented in a MODE Site Report to include MODE area from 1971 to 1974.

Moorings

Table 1 lists all the moorings set by the Buoy Group in 1971. An * before the mooring number indicates that the mooring diagram is presented in this report. Of the mooring diagrams, figures 3, 4 and 5 are examples of typical surface, intermediate and bottom moorings. Where several moorings are identical only one diagram is presented representing them all.

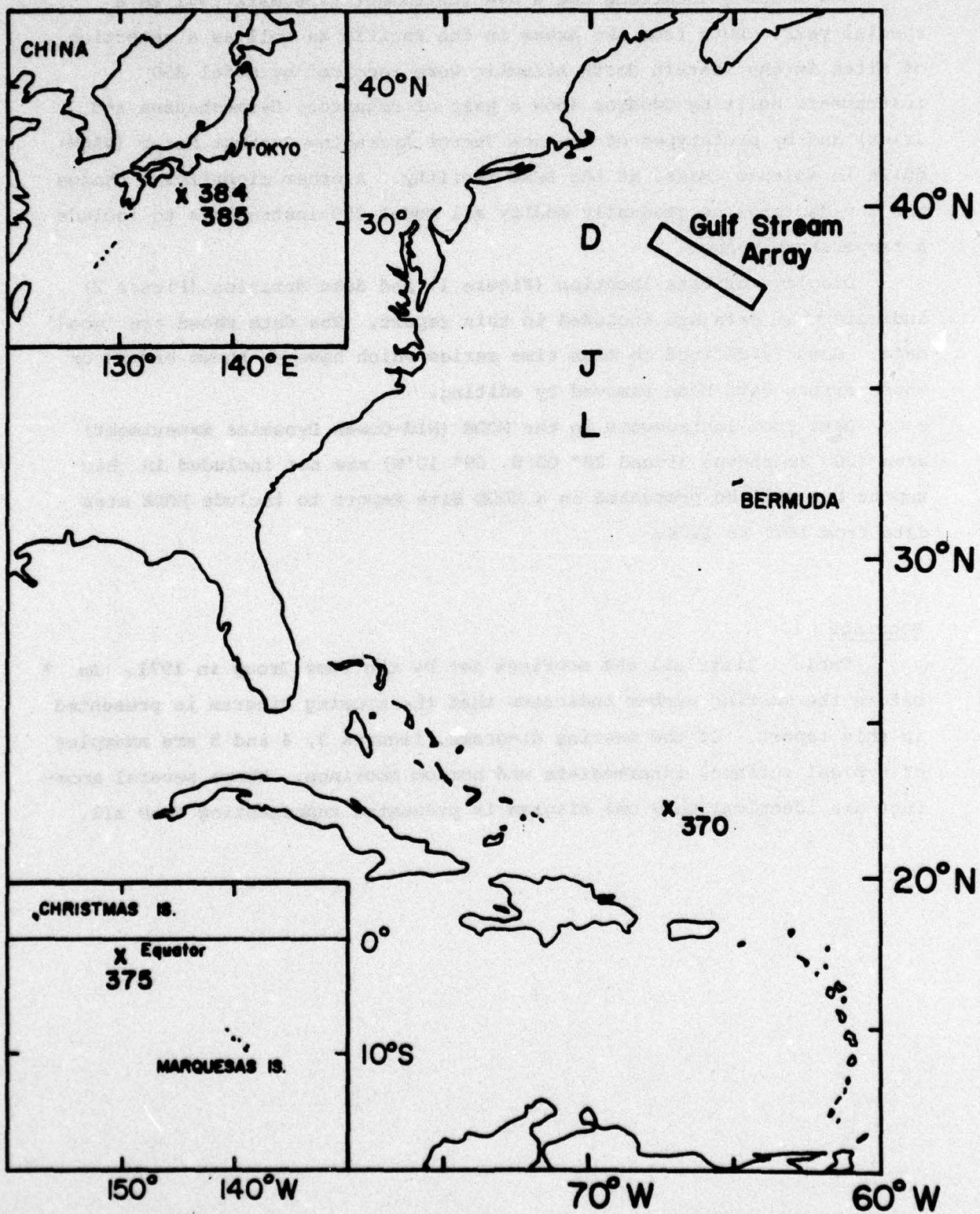


Figure 1. Mooring Sites

TABLE I

MOORINGS SET IN 1971

No.	Month Set	Location	Type	Duration (Days)	Recovery	Notes
369	Jan.	Antilles Ridge	Bottom	122	Complete	Antilles Ridge Experiment
*370	"	"	"	121	"	"
371	"	"	"	118	"	"
372	Apr.	Equat. Pacific			Lost	Joint W.H.O.I./S.I.O./M.I.T./Harvard experiment
373	"	"	Surface	25	Complete	" " " " " "
374	"	"	"	7	Partial	Failed - part picked up by fisherman
*375	"	"	"	188	Complete	Joint experiment, as above - failed
376	"	"	Bottom	-	Lost	" " " " " "
*377	"	Site D	Surface	27	Complete	VACM evaluation
*378	"	"	"	27	"	"
*379	"	"	"	91	"	Four-month current measurements; solar radiation measurements for R. Payne
*380	"	Gulf Stream	"	4	"	Engineering test of Gulf Stream mooring
381	May	Site L	"	184	"	Wire and hardware evaluation; solar radiation measurements
*382	"	Site J	Intermediate	87	"	Routine long-term measurements
383	"	Grand Banks	Bottom	91	"	Set and recovered from USCGC EVERGREEN
*384	June	Kuroshio Current	"	108	"	Joint W.H.O.I./S.I.O. experiment
*385	"	"	"	106	"	" " " " " "
386	"	"	"	-	Lost	" " " " " "
387	"	"	"	97	Complete	" " " " " "
*388	"	Gulf Stream	"	32	"	Gulf Stream seamount study
*389	"	"	"	32	"	" " " " " "
390	"	"	"	31	"	" " " " " "
391	"	"	"	31	"	" " " " " "
*392	"	"	"	31	"	" " " " " "
*393	"	"	"	31	"	" " " " " "
*394	"	"	"	30	"	" " " " " "

*395	July	Site D	Surface	45	"	Site D Array
*396	"	"	"	?	"	" - failed in Gulf Stream eddy
*397	"	"	"	45	"	" - picked up off station in eddy
*398	"	"	"	?	"	" - failed; removed by dragging
399	"	"	"	8	"	" - failed in eddy
*400	Aug.	Site J	Intermediate	137	"	Routine long-term measurements
401	"	Site L	Surface	85	"	Fishbite test
402	"	Site D	"	?	"	Failed in Gulf Stream eddy - part of Site D array
403	"	Site J	"	51	"	Failed - high current region engineering test
*404	Oct.	Site L	Bottom	353	Partial	One-year test
405	"	"	Surface	109	Complete	Six-month wire test
406	"	MODE	"	111	"	MODE-O array
407	"	"	"	102	Partial	" - 36 balls and release chafed off - release on bottom
408	"	"	Intermediate	102	Complete	MODE-O array
409	"	Site D	"	102	"	"
410	"	"	"	101	"	"
411	"	"	"	100	"	"
412	"	"	"	100	"	"
413	"	"	Bottom	2	Complete	Acoustic navigation Mooring - no instruments
414	"	"	"	2	"	"
415	Nov.	Antilles Ridge	"	161	"	Antilles Ridge experiment
416	"	"	"	161	"	"
417	"	"	"	160	"	"
*418	Dec.	Site D	Intermediate	10	"	Coherence Scales experiment) Set 920 m apart
*419	"	"	"	9	"	") at Site D
*420	"	"	Surface	91	"	Site D
*421	"	Site J	Intermediate	91	"	Site J

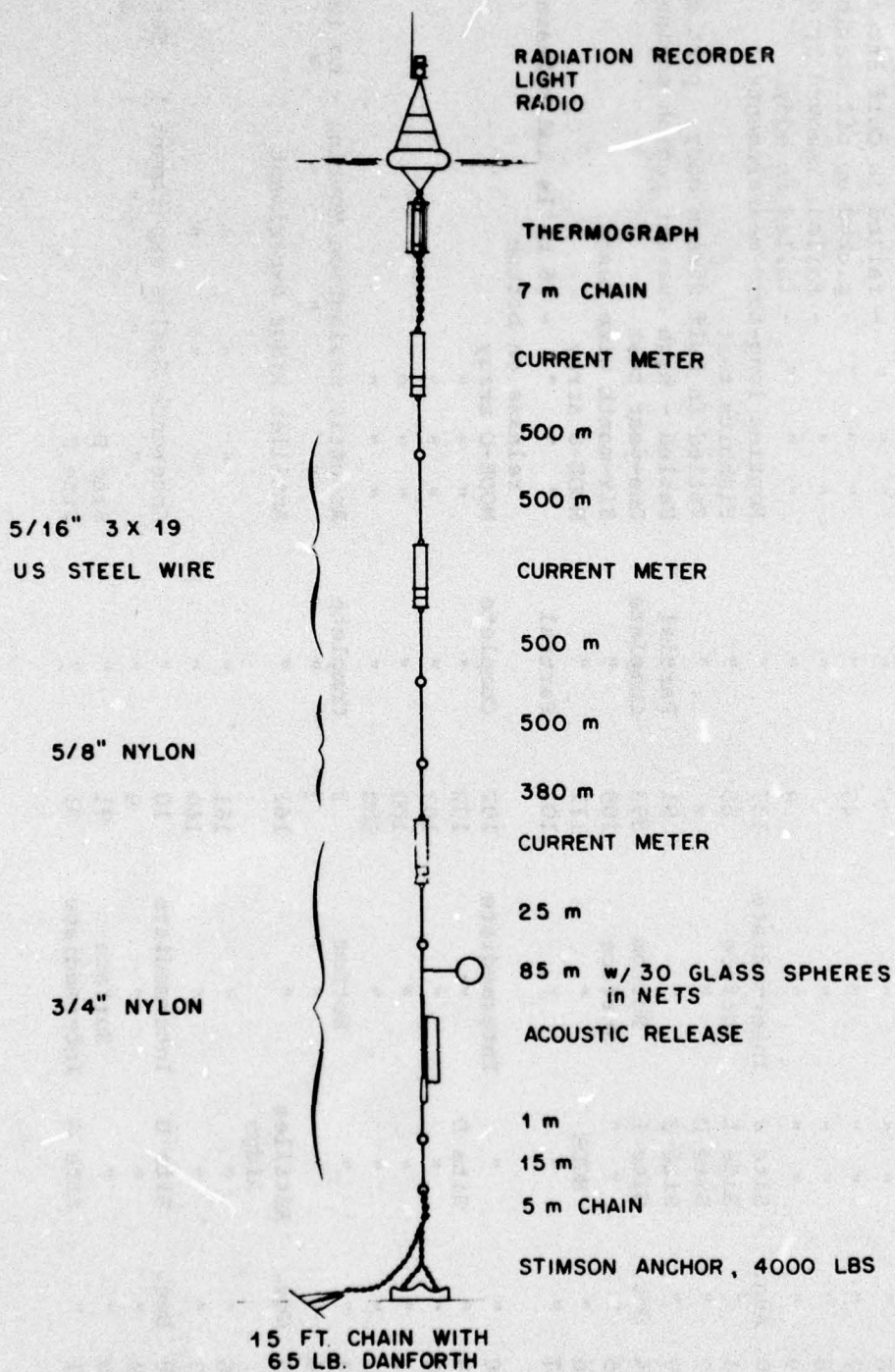


Figure 3. Typical Surface Mooring

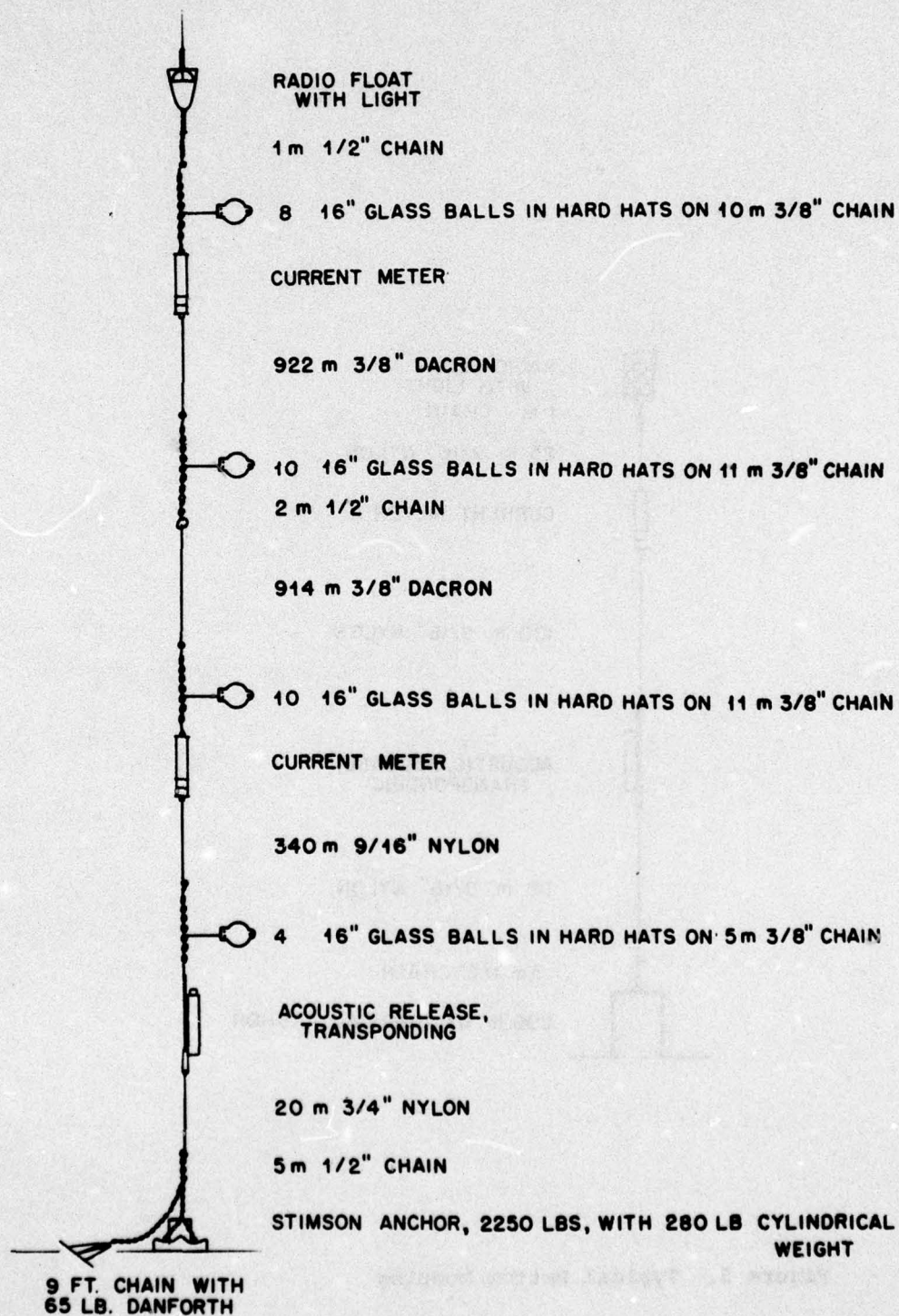


Figure 4. Typical Intermediate Mooring

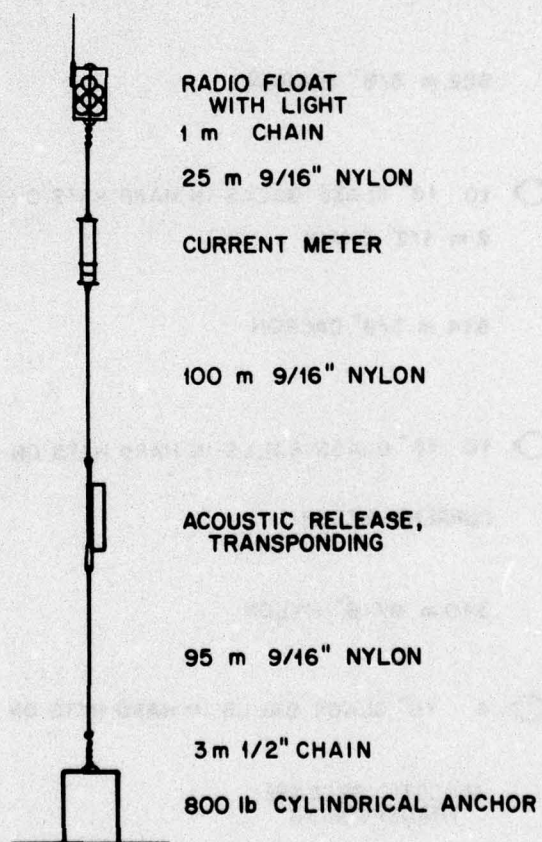


Figure 5. Typical Bottom Mooring

Hydrostation Data Selection

Temperature and salinity data from selected Nansen bottle casts are included in this report. Where possible, each mooring page is preceded by hydrostation data taken near the mooring. The data are presented as plots of temperature and salinity versus depth. The data identifier at the bottom of the temperature-salinity plot indicates the ship (e.g., AN = R. V. Atlantis II, CI = R. V. Chain, KN = R. V. Knorr), the cruise number, and the hydrostation number of the data shown. The position and date of the hydrocast are also included.

Current Meter Processing, Model 850

Most of the current meter data presented in this report came from Geodyne (now part of EG&G) model 850 current meters. The instruments burst-sampled compass, vane and rotor values and stored them plus time information on 1/4" two track magnetic tape cartridges. A few instruments were modified to record an analog of temperature derived from the resistance of a thermistor. All variables were transcribed onto a nine track magnetic tape at W.H.O.I. using a specially designed reader. The data were then converted to the Maltais Format (Maltais, 1969) and stored as compass, vane, bearing, scalar speed, time and temperature when available. Records are also presented from a few current meters modified to record wind speed and direction.

Random erroneous values and systematic errors were edited from the burst sampled data, then a vector average was formed for each data burst. Next, evenly spaced time series were created by interpolating through gaps in the data. The resulting basic vector series was used for input to other programs, such as those producing statistics and vector averaged series.

Low passed 1 hour vector series were then created to be displayed as stick diagrams.

Current Meter Processing, VACM

The VACM uses compass and vane information to compute a measure of the east and north components each time a pair of rotor magnets pass the sensing diode and sums these components through each recording interval. There are 16 magnets on the rotor so one complete rotor revolution would cause 8 compute cycles.

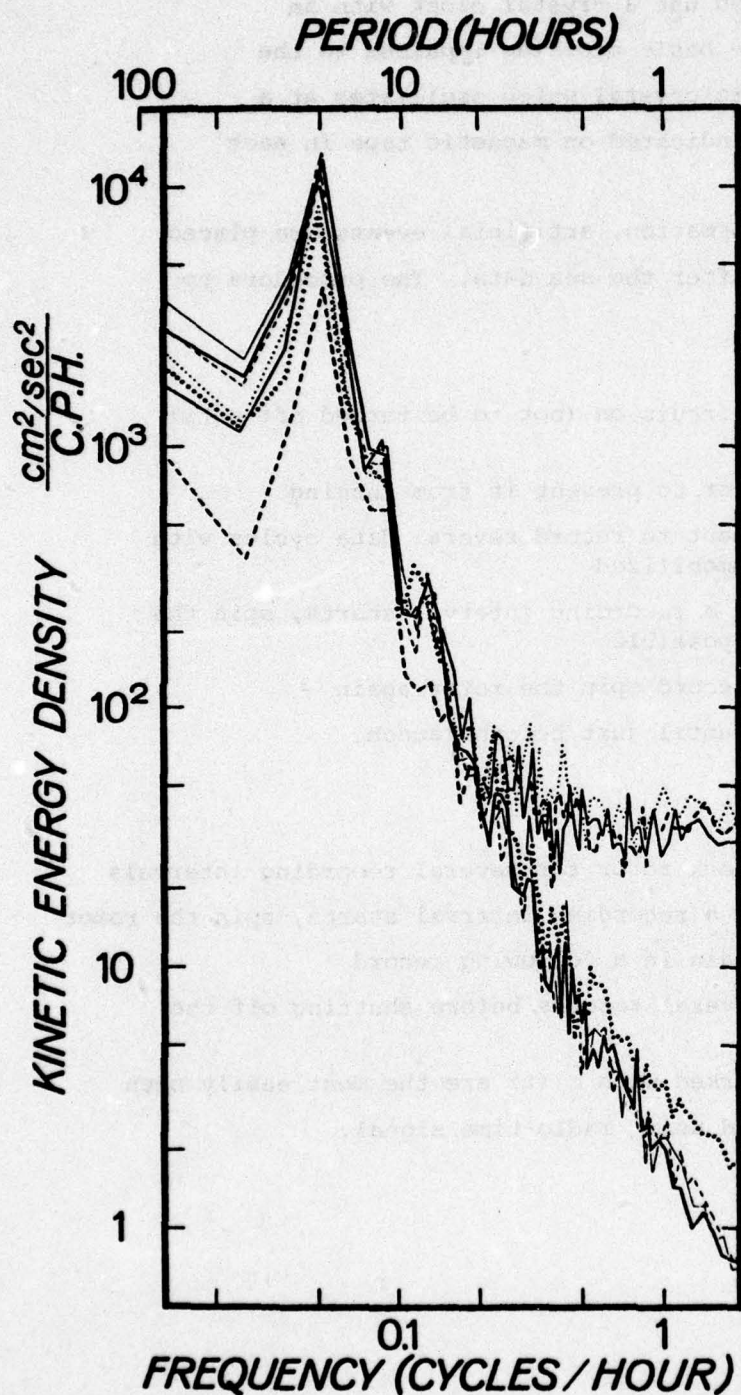
The pulses from a voltage to frequency converter, whose output frequency is related to the input thermistor resistance, are summed over the recording interval. These numbers are converted to temperature in degrees Celsius averaged over the recording interval.

The data from the prototype VACMs were recorded on a 1/4" tape cartridge unlike the later VACMs which recorded on 4 tracks on a digital cassette. The variables stored on tape were a count of temperature resistance, the last used value of compass and vane, the number of compute cycles (rotor counts), the contents of the north and east storage registers, and a time word.

The data were transcribed from tape cassette to 9 track computer compatible magnetic tape using a special reader connected to a Hewlett-Packard computer. The data were then decoded and stored on magnetic tape in Maltais format (Maltais, 1969) as the following variables: east component, north component, direction (derived from U and V), speed (derived from U and V), time, cassette #, rotor speed (derived from rotor count), rotor count, compass, vane, bearing (derived from compass, vane and magnetic variation) and temperature.

Bad data cycles and time bases were corrected by a variety of methods. The result is an evenly spaced time series which is used as the basic input for further processing.

An energy spectra comparison between VACMs and Model 850s is shown in Figure 6.



ENERGY SPECTRA OF NEAR SURFACE CURRENTS SITE D MAY 1971

—	3772	8	Meters	VACM
—	3773	10	Meters	850
...	3774	12	Meters	VACM
- - -	3776	21	Meters	850
—	3783	8	Meters	VACM
...	3784	10	Meters	850
- - -	3785	12	Meters	VACM

3 MODEL 850
CURRENT METERS
(21.5 sec. samples)

(Sticking Compass)
4 VECTOR AVERAGING
CURRENT METERS
(continuous sampling)

Figure 6.

Data Time Base

Both the VACM and the Model 850 use a crystal clock with an accuracy of ± 1 second per day. The basic clocking impulses to the instrument are provided by a quartz crystal which oscillates at a frequency of 74.5654 KHz. Time is indicated on magnetic tape in each record cycle.

To provide secondary time information, artificial events are placed in the rotor field both before and after the sea data. The procedure to do this is as follows:

For First Events,

- Step 1. Turn the record circuit on (not to be turned off until recovery)
- Step 2.
 - a) Block the rotor to prevent it from turning
 - b) Allow instrument to record several data cycles with the rotor immobilized
- Step 3. (t) Ten seconds after a recording interval starts, spin the rotor as fast as possible
- Step 4. (t) In a successive record spin the rotor again
- Step 5. Stop rotor again until just before launch
- Step 6. (t) Free the rotor

For Last Events,

- Step 1. (t) After recovery block rotor for several recording intervals
- Step 2. (t) Ten seconds after a recording interval starts, spin the rotor
- Step 3. (t) Spin the rotor again in a following record
- Step 4. Stop rotor for several records before shutting off the record circuit.

The previous steps that are marked with a (t) are the most easily seen in the data and times should be noted using radio time signal.

Problems

The discovery that there was a measurable direction difference between the vane and the vane follower with the Model 850 led to two different corrections in the data. A constant offset between the vane and the vane follower was corrected by adding the appropriate difference to the vane reading. The second problem was the addition of the horizontal component of the earth's magnetic field to the field of the vane magnets at the vane follower. This tends to pull the vane follower slightly north of the true vane direction which generates a northerly bias in the data that is greatest for east or west and decreases as the direction approaches north or south. A sine wave correction is applied to the data the magnitude of which was determined by the strength of the local horizontal component of the earth's magnetic field and the magnetic strength of the vane magnets. For Site D the amplitude of the sine correction is $\pm 7^\circ$, for Site L, $\pm 9^\circ$. Steps were taken to eliminate both problems by providing stronger magnetic coupling between vane and vane follower.

The VACM had a design problem that was evident when the rotor count for a record was zero. A zero rotor count meant that no compass or vane samples had been taken nor had the east and north directional value been computed. Temperature and time were the only recoverable variables on tape. A modification to record one artificial rotor count eliminated the problem in later data records.

Nomenclature

An * following the data name on a mooring page means that the data series is presented. Comments are included on the mooring page for some current meter data not presented.

The magnetic tape recording current meters built by Geodyne Corporation are referred to as the Model 850 current meters.

A dummy current meter is really a test of the pressure case for the new vector averaging current meter.

Ten. rec.	Tension recorder
Tensac	Tension and acceleration recorder
Tens.	Tensiometer
Tel.	Telemetry device
Incl.	Inclinometer
Depth rec.	Depth recorder

W/H rec. Wave/Height recorder

Temp Thermograph

To insure that each data series has a unique and meaningful name the following is practiced:

The first three digits are the mooring number 398

The next digit is the instrument position on the mooring starting at the top 6

Consecutive letters of the alphabet indicate successive modification of the data (editing stages, truncation, etc.) C

Vector averaging interval: 900 (seconds), 1H (Hour), etc. 1800

Total data name 3986C1800.

Data Presentation

The current meter data are shown in numerical order. Associated hydrostation and mooring information precede the data from each mooring. The displays used to present each current meter series are described in succeeding paragraphs.

Statistics (STATS)

Standard statistical parameters are calculated for data in the time range given at the bottom of the table. Given n speed and direction or temperature values in a sample, we define $E_i = S_i \sin \theta_i$, $N_i = S_i \cos \theta_i$, then for $A = E, N$, and S .

$$\text{mean, } \bar{A} = \frac{1}{n} \sum_{i=1}^n A_i$$

$$\text{variance, } \sigma_A^2 = \frac{1}{n} \sum_{i=1}^n A_i^2 - \bar{A}^2$$

$$\text{standard error of the mean} = \frac{\sigma_A}{\sqrt{n}}$$

$$\text{standard deviation} = \sigma_A$$

$$\text{skewness} = \frac{1}{\sigma_A^3} \left[\frac{1}{n} \sum_{i=1}^n A_i^3 - \frac{3\bar{A}}{n} \sum_{i=1}^n A_i^2 + 2\bar{A}^3 \right]$$

$$\text{kurtosis} = \frac{1}{\sigma_A^4} \left[\frac{1}{n} \sum_{i=1}^n A_i^4 - \frac{4\bar{A}}{n} \sum_{i=1}^n A_i^3 + \frac{6\bar{A}^2}{n} \sum_{i=1}^n A_i^2 - 3\bar{A}^4 \right]$$

The program also calculates "East and North" statistics,

$$\text{covariance, } M = \frac{1}{n} \sum_{i=1}^n E_i N_i - \bar{E} \bar{N}$$

$$\text{standard deviation of covariance, } \sigma_m = \frac{1}{n} \sum_{i=1}^n (E_i N_i)^2 - \overline{E_i N_i}^2$$

$$\text{standard error of covariance} = \frac{\sigma_m}{\sqrt{n}}$$

$$\text{correlation coefficient, } M' = \frac{M}{\sigma_E \sigma_N}.$$

The program also calculates parameters related to vector quantities: the scalar amplitude of the vector mean, $V_m = \sqrt{\bar{E}^2 + \bar{N}^2}$; vector variance, $V_v^2 + \frac{1}{2} (\sigma_E^2 + \sigma_N^2)$; standard deviation = V_v .

Spectra

The program TIMSAN (TIME Series ANALysis) uses the Fast Fourier Transform algorithm of Singleton (1969) and is restricted to data segments of length N points, where N must be an even number which has no prime factor larger than 5, and must be less than 8000 points; data series longer than this must be broken into two or more pieces.

The number of degrees of freedom for the first 40 plotted points is given by $v = a m s$ where m is the number of adjacent frequency bands being averaged (usually 8), s is the number of independent data pieces being averaged (1), and a should be two for Horizontal Kinetic Energy [HKE] spectra for which the EAST and NORTH components seem statistically independent. In the absence of information regarding NORTH-EAST correlation, one should use $a = 2$ to be safe.

On the log-log plots the number of points averaged together increases with frequency. This eliminates the bunching together of points at high frequencies, increases the degrees of freedom of the high frequency estimates, and still permits low-frequency resolution. The averaging practice is as

follows: counting from the left of the plot, the first 40 plotted points represent data that have been averaged over (usually) 8 adjacent frequency bands; the data for the next 15 plotted points have been averaged over twice as many frequency bands; the next 6 over five times as many, the next 40 over ten times as many, the next 15 over twenty times as many; the next 6 over fifty times as many, the next 40 over 100 times as many and so on. In this way, for example, 7900 data points with no averaging would be plotted as only 176 points, and the last 14 estimates would be averaged over 200 basic frequency bands. The m in the formula $\nu = a m s$ for degrees of freedom is, in this example, 200 times larger at the highest frequencies than at the lowest frequencies.

For $\nu > 30$, the confidence limits for the spectral estimates are given approximately by $(1 - 2/9\nu \pm Z\sqrt{2/9\nu})^{1/3}$ where $Z = 1.28375$ for 80% confidence limits, $Z = 1.645$ for 90%, $Z = 1.96$ for 97% and $Z = 2.5757$ for 99%. In the example above, if the HKE spectral plot had 2 pieces and was averaged over 8 adjacent frequency bands then $\nu = 2 \times 2 \times 8 = 32$ for the lowest frequencies (assuming NORTH and EAST components are highly correlated) and $200 \times 32 = 6400$ for the highest frequencies. The 95% confidence intervals (i.e., 95% of the time one would expect the spectral estimates to vary no more than this much) would be (0.57, 1.55) at low frequencies, and (0.97, 1.03) at high frequencies.

For $\nu \leq 30$, one must obtain confidence intervals from Chi-Squared distribution tables in standard statistical references.

Stick Plot

The hourly U and V time series are filtered using a symmetrical running Gaussian filter with a half-width of 24 hours. The resultant series is 48 hours shorter than the input time series (the first and last 24 hours are lost). The short data were subsampled so that there were four points plotted per day, medium length data were plotted two points per day, and long data series were plotted ~ 1.7 points per day. Vector direction usually follows normal direction conventions, i.e., north is up. Occasionally the plot will be rotated to show East up when the current flow is markedly easterly or westerly.

Variable vs. Time Plot

This is a plot of any variable as a function of TIME. The plot is generated from the 1 hour vector averaged series. In some plots of speed it is possible to see the rotor threshold of 1.8 cm/sec.

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(unpublished manuscript).
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Webster, F., and N. P. Fofonoff, 1965

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A compilation of moored current meter observations, Volume III.
W.H.O.I. Ref. 67-66 (unpublished manuscript).

MOORING NO. 370

Lat. 22° 14.6'N Long. 67° 18.3'W

Set January 22, 1971

Set by R. Heinmiller

Ship Mt. Mitchell* Cruise

Recovered May 23, 1971

Recovered by R. Heinmiller

Ship Mt. Mitchell* Cruise

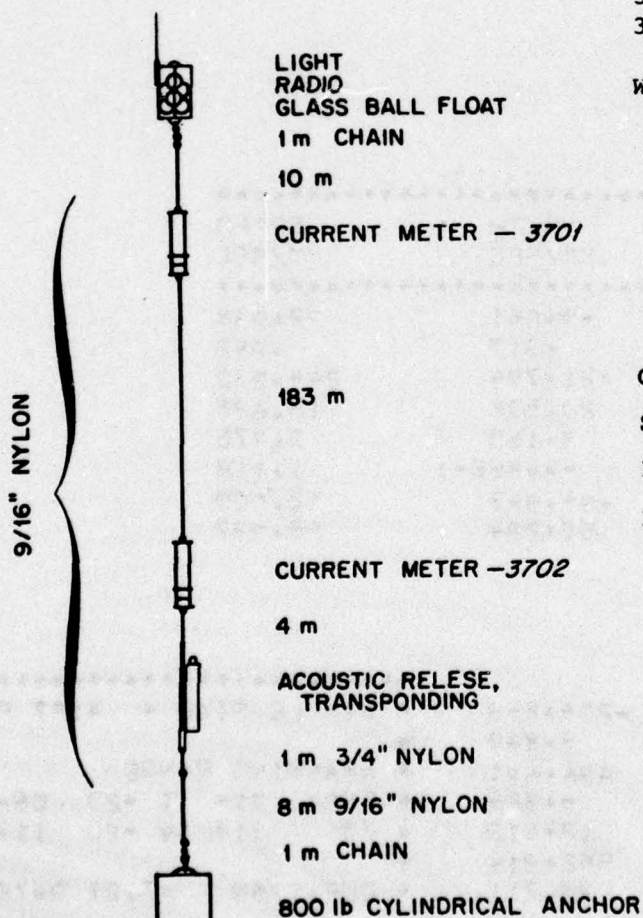
Mooring type - Bottom

Purpose of mooring

Near bottom current measurements
near Antilles Ridge

Data No.	Instr. Type	Depth (m)
3701*	Model 850	5201
3702	Model 850	5386

Water depth 5402



Comments

Ship * Mt. Mitchell, Cruise
RP-13-MI-71, NOAA.

3702 vane and speed values look
suspicious.

DATA NUMBER 3701

Instrument no.	<u>M-129</u>	*	Instrument sampling scheme
Inst. depth	<u>5201</u>	*	VACM accumulated averages every <u> </u> sec
Float depth	<u>5186</u>	*	X Model 850 data bursts every <u>1800</u> sec
Water depth	<u>5402</u>	*	sampled at <u>5.27</u> sec
		*	for <u>16</u> samples

COMMENTS - Thirty days of data lost due to tape slippage (tape advancing improperly).

DATA/ 3701K1800

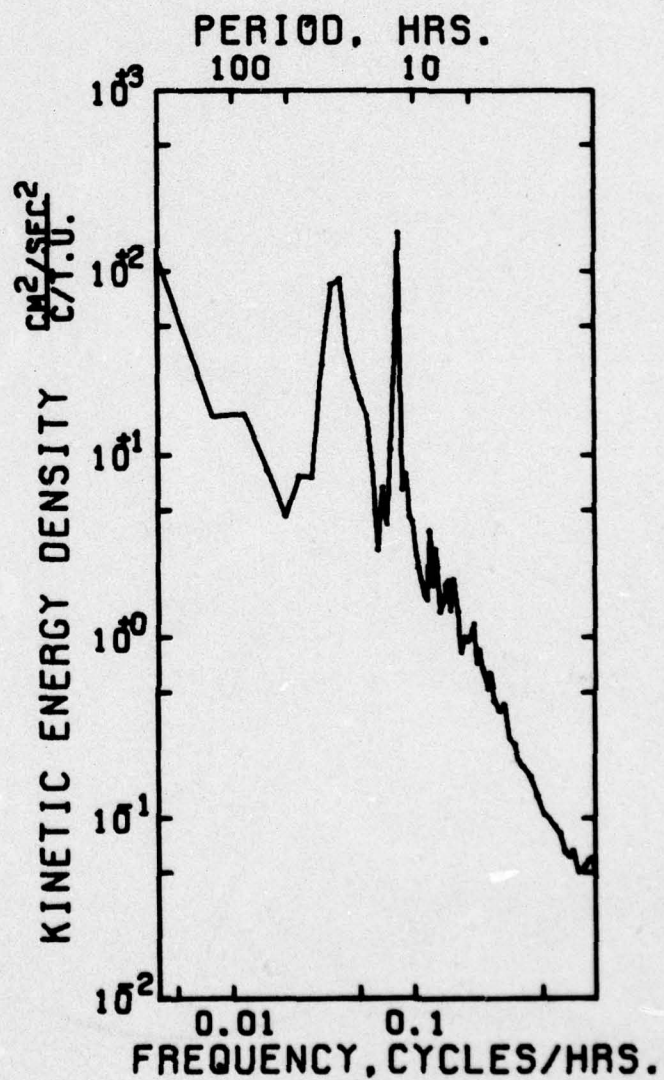
VARIABLE	*	EAST	NORTH	SPEED
UNITS	*	MM/SEC	MM/SEC	MM/SEC
MEAN	*	8.785	-9.051	32.238
STD. ERR.	*	.410	.317	.242
VARIANCE	*	702.633	421.794	244.230
STD. DEV.	*	26.507	20.538	15.628
KURTOSIS	*	2.722	3.160	3.775
SKEWNESS	*	-.989E-1	-.485E-1	1.118
MINIMUM	*	-65.714	-94.943	12.000
MAXIMUM	*	95.738	51.224	99.327

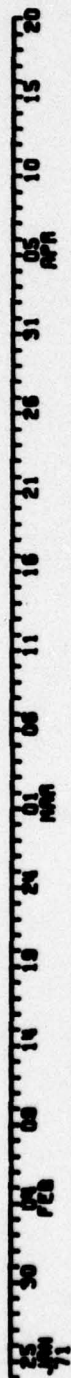
EAST & NORTH

COVARIANCE	*	-208.853
STD. ERR. OF COVARIANCE	*	9.839
STD. DEV. OF COVARIANCE	*	636.631
CORRELATION COEFFICIENT	*	-.384
VECTOR MEAN	*	12.613
VECTOR VARIANCE	*	562.214
VECTOR STD. DEV.	*	23.711

* SAMPLE SIZE = 4187 POINTS
*
* SPANNING RANGE
* FROM 71- I -23 06.00.37
* TO 71- IV -20 11.00.37
*
* DURATION 27.21 DAYS

AUTO SPECTRUM
 3701K1800 EAST COMP
 3701K1800 NORTH COMP
 5201 METERS
 71-I-23 TO 71-IV-18
 1 PIECES WITH 2048 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



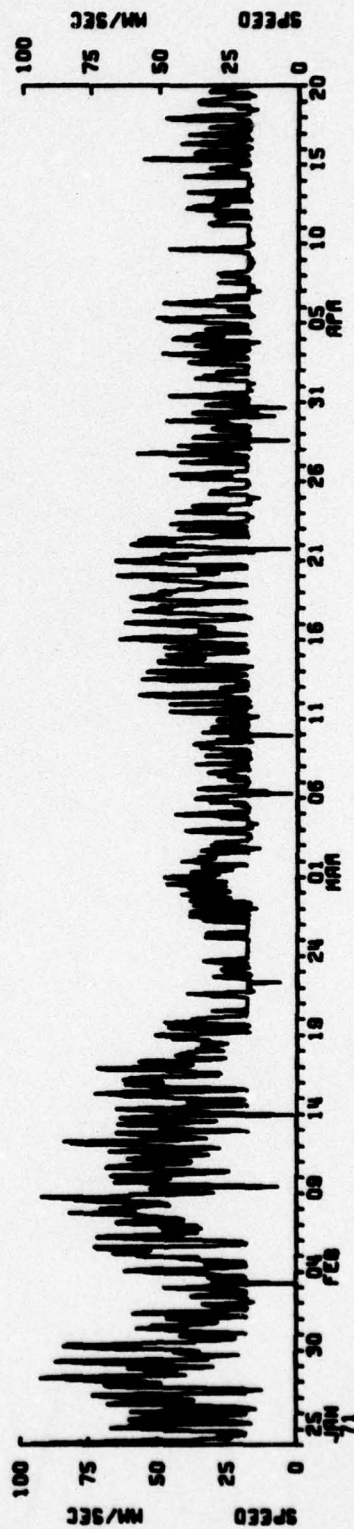
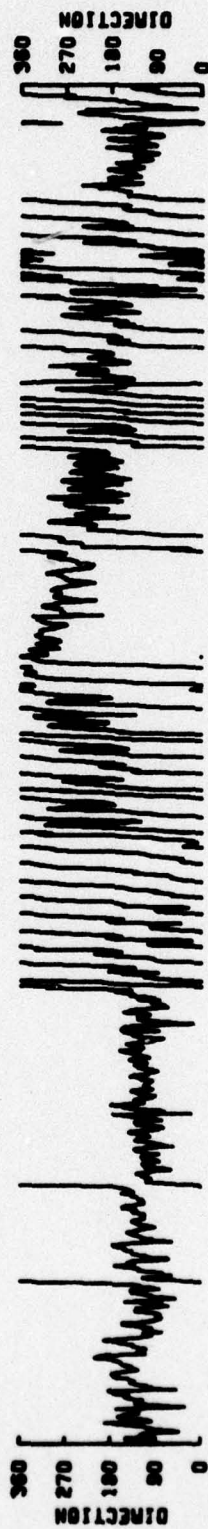


NORTH



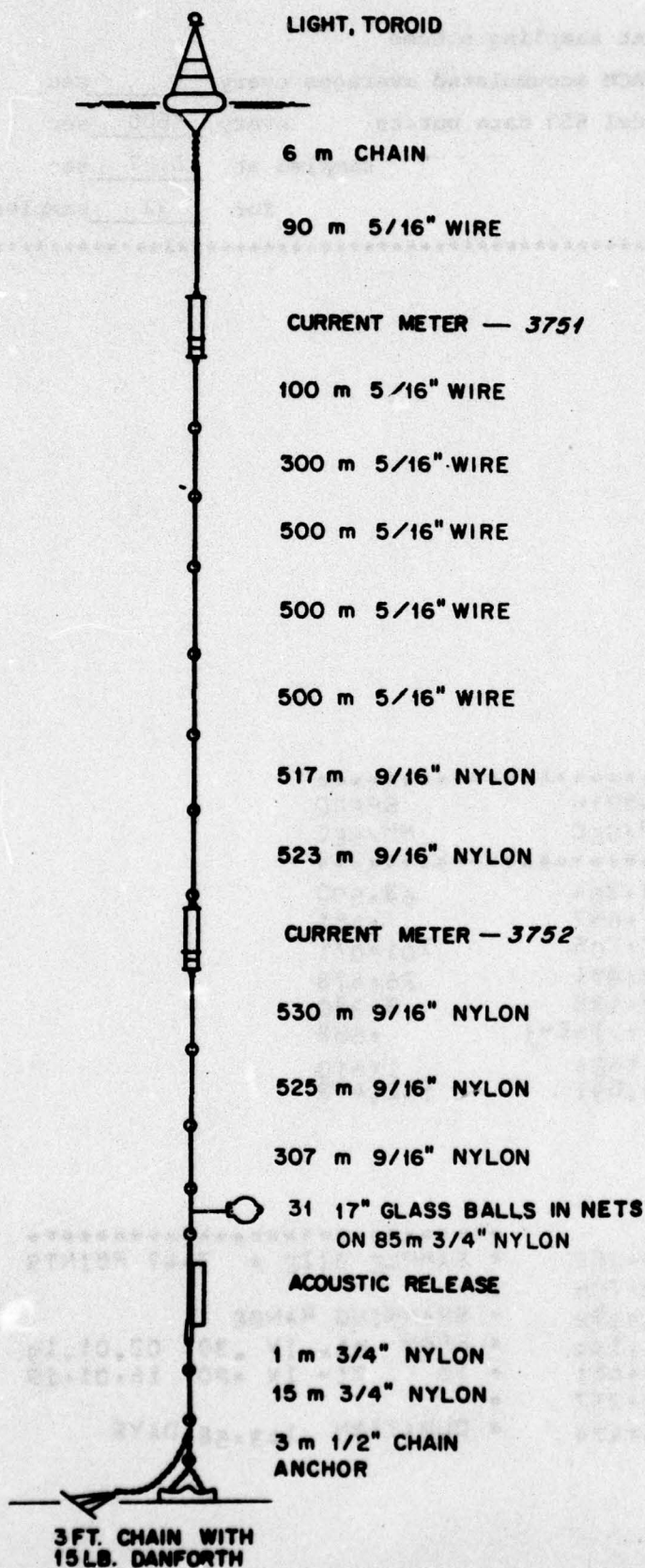
25 MM/SEC

3701K



MOORING NO. 375

Lat. 01° 02.3'S Long. 149° 50.7'W



Set April 18, 1971

Set by R. Heinmiller

Ship † Cruise †

Recovered September 20, 1971

Recovered by D. Simoneau/G. Tupper

Ship †† Cruise ††

Mooring type - Surface

Purpose of mooring

Measurement of Equatorial
Countercurrent

Data No.	Instr. Type	Depth (m)
3751	Model 850	100
3752*	Model 850	3100
Water depth		4647

Comments

† Ship Thomas Washington, Cruise Aries IV,
Scripps.

†† Ship R.V. Melville, Cruise Antipodes
Leg 17, Scripps.

3751 instrument failed five records
after launch.

DATA NUMBER 3752

Instrument no. M-142

Inst. depth 3100

Float depth -0-

Water depth 4647

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 3600 sec

sampled at 5.27 sec

for 32 samples

COMMENTS

DATA/ 3752D1H

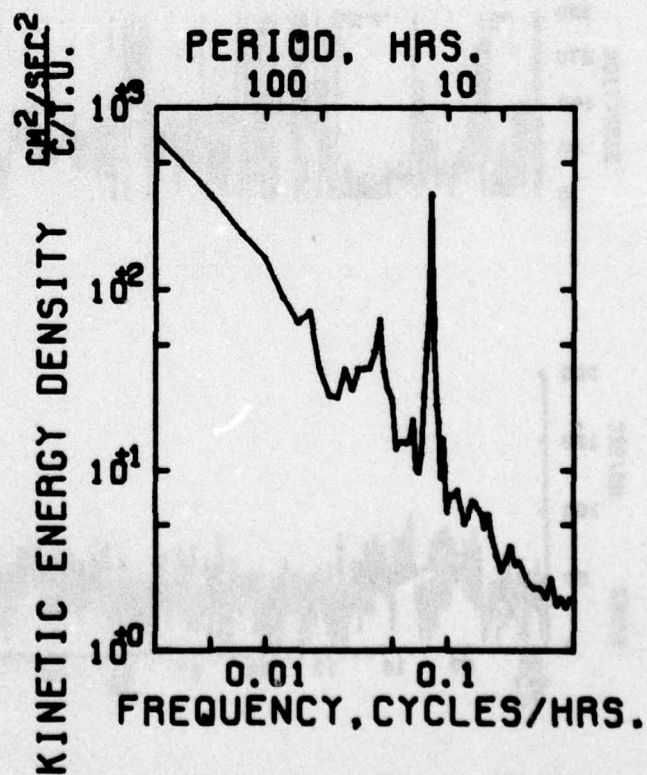
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      45.527      3.364      63.590
STD. ERR. *      .583       .657       .451
VARIANCE  *      1173.010    1487.705    701.071
STD. DEV. *      34.249     38.571     26.478
KURTOSIS  *      2.975      2.138      3.380
SKEWNESS  *      .300       .276E-1     .558
MINIMUM   *      -57.694     -91.624     1.610
MAXIMUM   *      138.718     113.541     152.443
*****
```

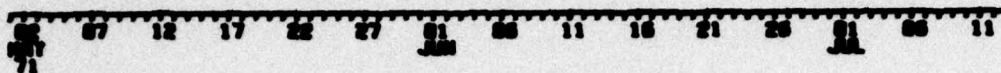
EAST & NORTH

```
*****
COVARIANCE      *      236.352
STD. ERR. OF COVARIANCE *      32.706
STD. DEV. OF COVARIANCE *      1920.192
CORRELATION COEFFICIENT *      .179
VECTOR MEAN      *      45.651
VECTOR VARIANCE   *      1330.357
VECTOR STD. DEV.  *      36.474
*****
```

```
*****
* SAMPLE SIZE = 3447 POINTS
*
* SPANNING RANGE
* FROM 71- IV .30 02.01.19
* TO 71- IX .20 16.01.19
*
* DURATION 143.58 DAYS
*****
```


AUTO SPECTRUM
 375201H EAST COMP
 375201H NORTH COMP
 3100 METERS
 71-IV-30 TO 71-IX-12
 1 PIECES WITH 1620 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





EAST

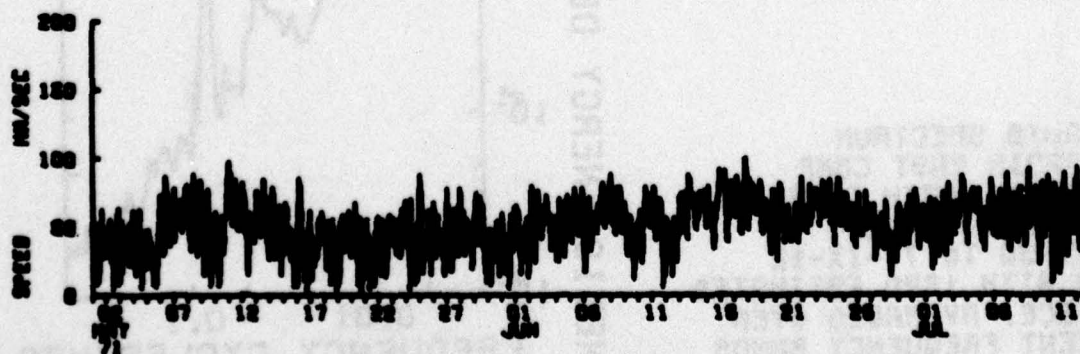
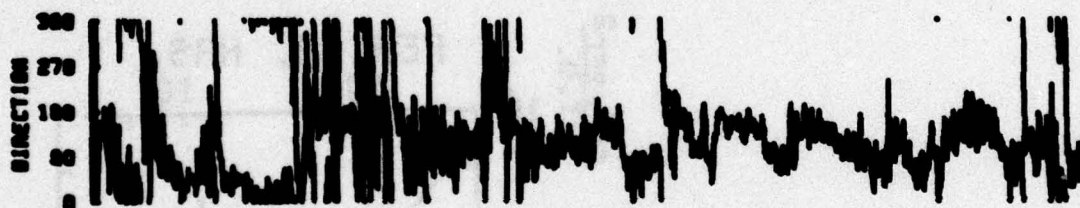


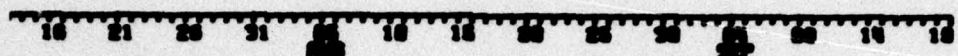
NORTH



50 NM/SEC

37520





EAST

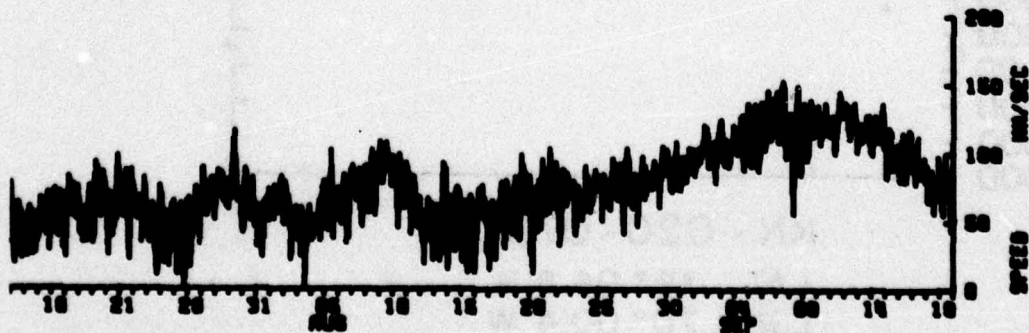


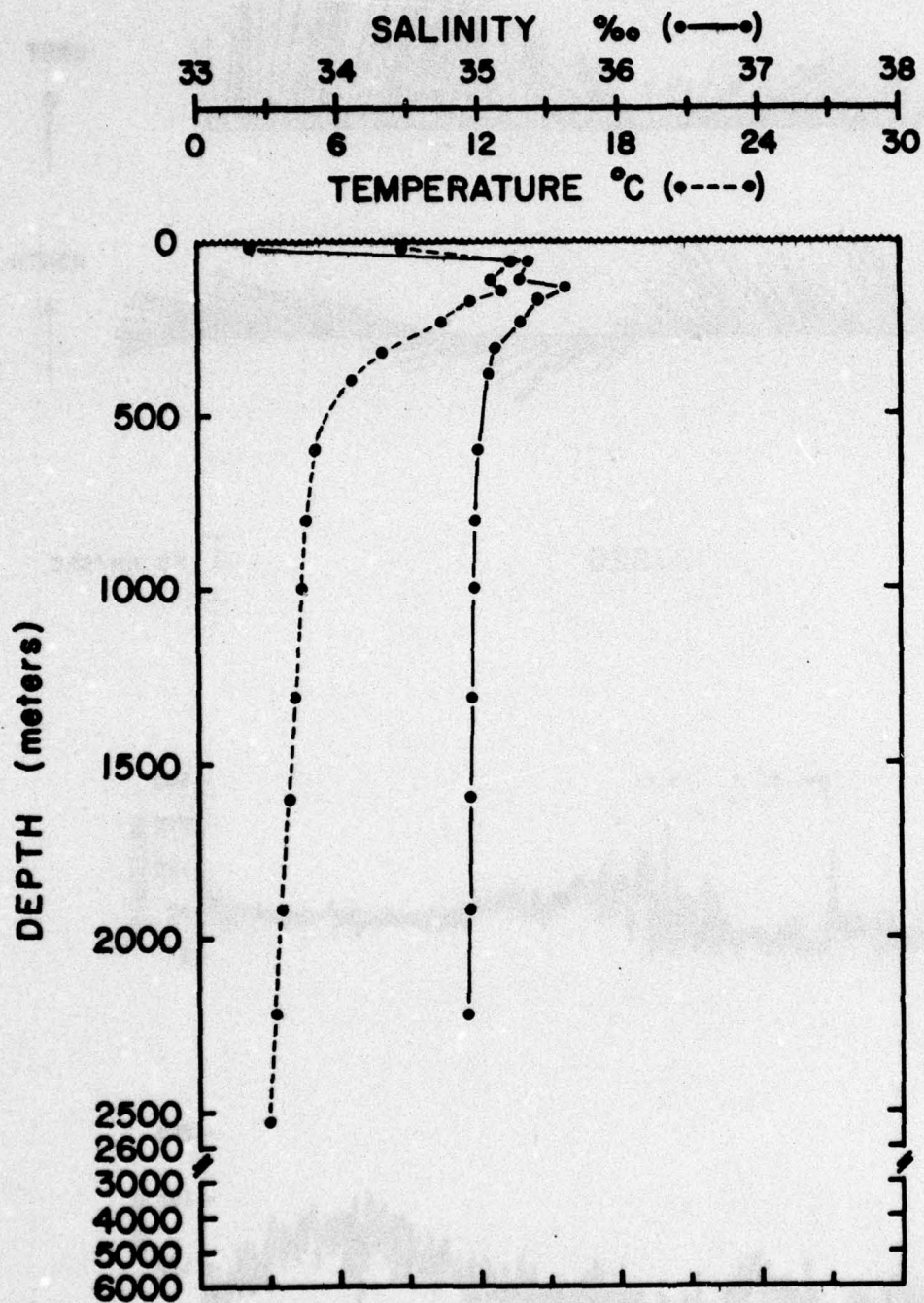
NORTH



37520

50 MM/SEC





KN - 020 - 070

LAT. 39° 06.8' N

LONG. 70° 00.4' W

DATE 71-05-9

MOORING NO. 377

Lat. 39° 08.0'N Long. 70° 00.3'W

LIGHT
RADIO

Set April 27, 1971

Set by J. Gifford

Ship R. V. Knorr Cruise 20

Recovered May 24, 1971

Recovered by J. Gifford

Ship Cap'n Bill IV† Cruise

Mooring type - Surface

Purpose of mooring

A) Evaluation of the new Vector
Averaging Current Meter (VACM)

B) Measurements at Site D

TELEMETERING TENSIO METER

4 m CHAIN

VACM — 3772

CURRENT METER — 3773

VACM — 3774

THERMOGRAPH — 3775

6 m

CURRENT METER — 3776

WAVE HEIGHT RECORDER

500 m

500 m

500 m

524 m

401 m

88 m 3/4" NYLON WITH 27 GLASS
SPHERES EVENLY SPACED

ACOUSTIC RELEASE

15 m 3/4" NYLON

5m 1/2" CHAIN

STIMSON ANCHOR, 3000 LBS

Data No.	Instr. Type	Depth (m)
3771	Tel. tens.	2
3772*	VACM	8
3773*	Model 850	10
3774*	VACM	12
3775	Temp	13
3776*	Model 850	21
3777	W/H rec.	22

Water depth 2665

Comments

† Private charter

See page xv for a composite energy
spectral diagram of both model 850
and VACM data.

5/16" WIRE

9/16" NYLON

15 FT. CHAIN WITH
65 LB. DANFORTH

DATA NUMBER 3772

Instrument no. V-0101

Inst. depth 8

Float depth -0-

Water depth 2665

Instrument sampling scheme

X VACM accumulated averages every 900 sec

Model 850 data bursts every sec

sampled at sec

for samples

COMMENTS

DATA/ 3772G900

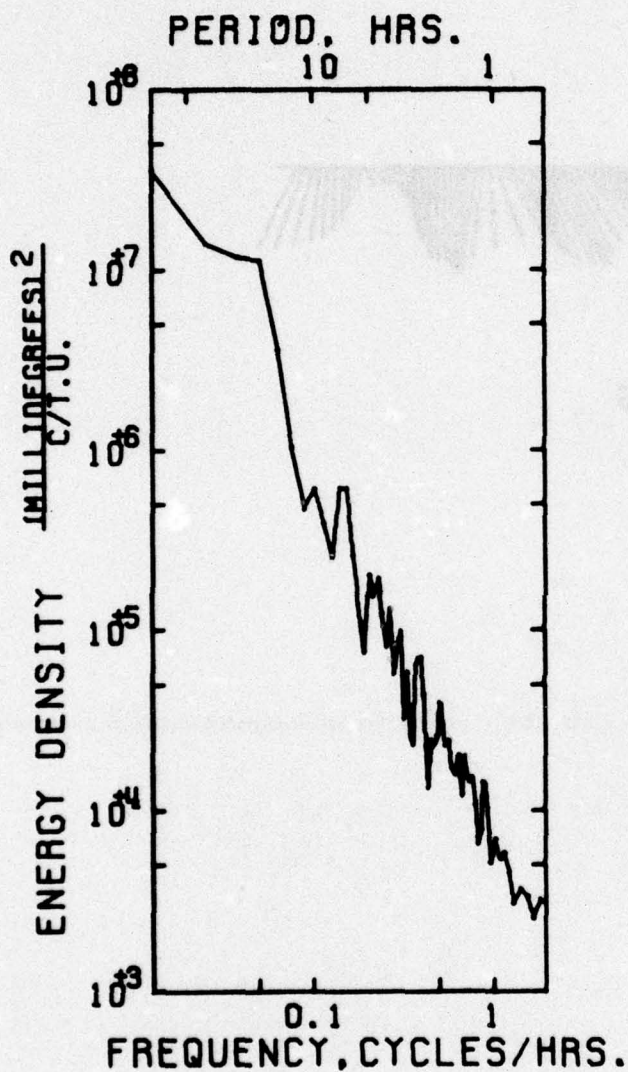
```
*****
VARIABLE *   EAST COMP   NORTH COMP   SPEED   TEMPERATURE
UNITS    *   MM/SEC     MM/SEC      MM/SEC  DEGREES C.
*****
MEAN      =   -135.467      6.695      294.074      10.042
STD. ERR. =     4.131      4.232      2.839      .430E-1
VARIANCE  =  43158.693    45303.211    20378.140      4.672
STD. DEV. =   207.747    212.846    142.752      2.161
KURTOSIS  =     2.812      2.520      2.852      1.948
SKEWNESS  =     .283E-1    -.109      .378      .352
MINIMUM   =   -731.875    -573.127      2.000      6.205
MAXIMUM   =    455.412     599.835     741.000     13.966
*****
```

EAST COMP & NORTH COMP

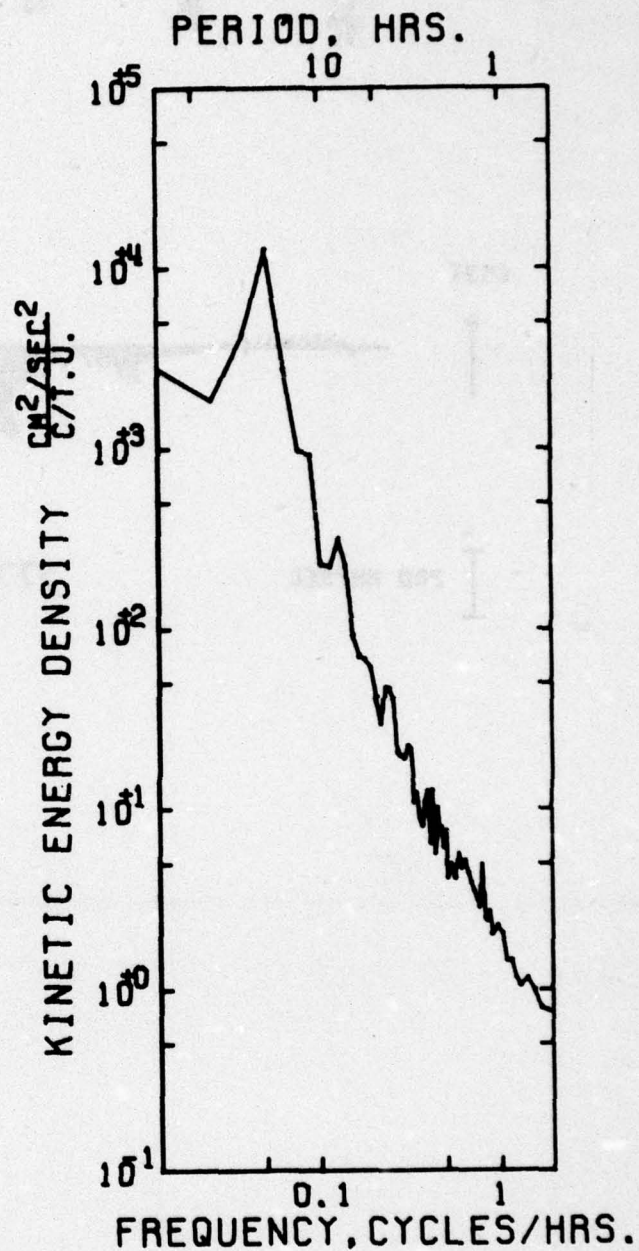
COVARIANCE
STD. ERR. OF COVARIANCE
STD. DEV. OF COVARIANCE
CORRELATION COEFFICIENT
VECTOR MEAN
VECTOR VARIANCE
VECTOR STD. DEV.

■ -3655.732
■ 1008.396
■ 50711.407
■ .827E-1
■ 135.632
■ 44230.952
■ 210.312

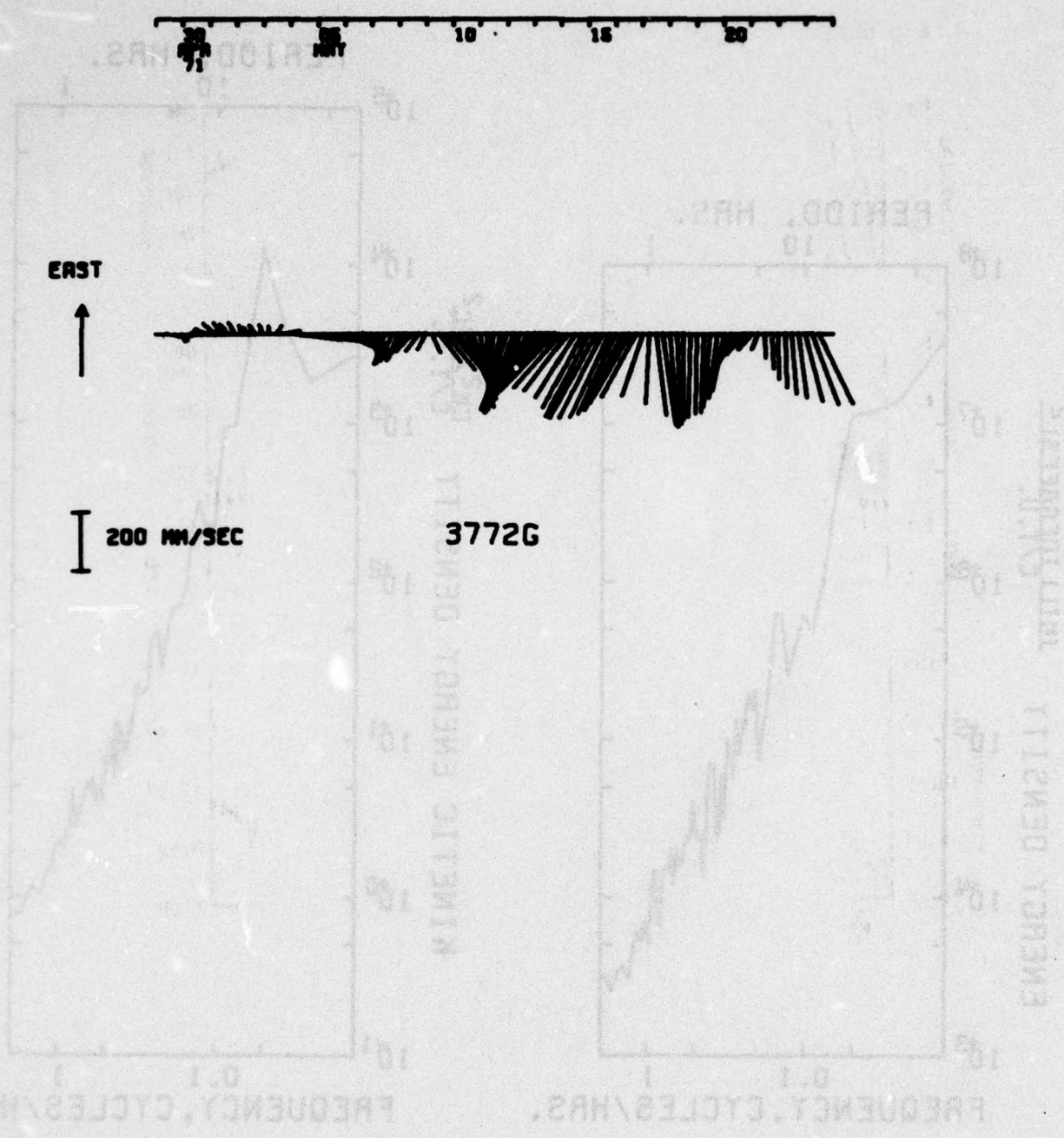
* SAMPLE SIZE = 2529 POINTS
*
* SPANNING RANGE
* FROM 71- IV -28 06.00.00
* TO 71- V -24 14.00.00
*
* DURATION 26.33 DAYS



AUTO SPECTRUM
3772G900 TEMPERATURE
8 METERS
71-IV-28 TO 71-V-24
1 PIECES WITH 1250 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS

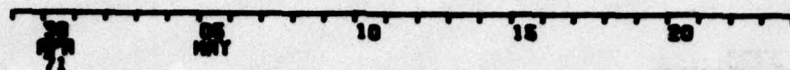


AUTO SPECTRUM
3772G900 EAST COMP
3772G900 NORTH COMP
8 METERS
71-IV-28 TO 71-V-24
1 PIECES WITH 1250 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 3772000 EAST COMP
 3772000 NORTH COMP
 0 METERS
 71-1V-58 TO 71-4-58
 1 PIECES WITH 1500 ESTIMATES
 PER PIECE, AVERAGED OVER
 0 ADJACENT FREQUENCY BANDS

AUTO SPECTRUM
 3772000 TEMPERATURE
 0 METERS
 71-1V-58 TO 71-4-58
 1 PIECES WITH 1500 ESTIMATES
 PER PIECE, AVERAGED OVER
 0 ADJACENT FREQUENCY BANDS

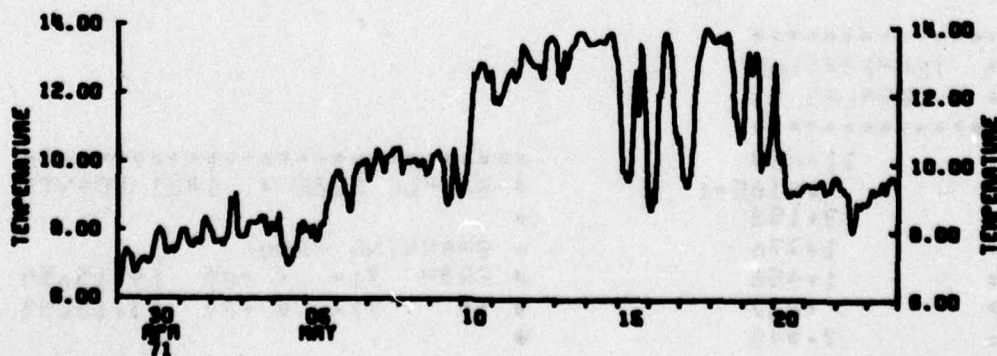
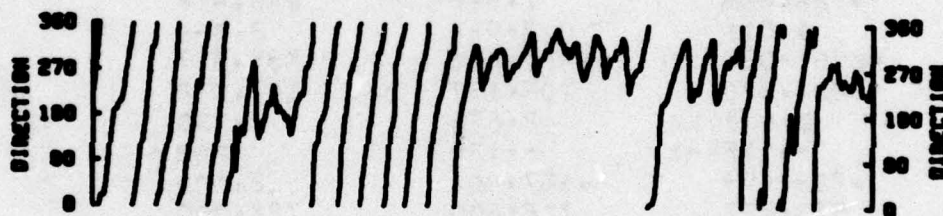


NORTH



200 MM/SEC

3772G



DATA NUMBER 3773

Instrument no. M-198-T

Instrument sampling scheme

Inst. depth 10

VACM accumulated averages every sec

Float depth -0-

x Model 850 data bursts every 900 sec

Water depth 2665

sampled at 5.27 sec

for 24 samples

COMMENTS - The temperature record is shorter than the current record.
Temperature did not start until May 5th.

DATA/ 3773K900

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

MEAN * -128.689 1.646 280.918
STD. ERR. * 4.011 3.932 2.864
VARIANCE * 42961.033 41289.040 21898.817
STD. DEV. * 207.270 203.197 147.982
KURTOSIS * 2.658 2.676 2.730
SKEWNESS * -.118E-1 -.125 .263
MINIMUM * -723.499 -657.201 2.000
MAXIMUM * 573.207 702.600 798.000

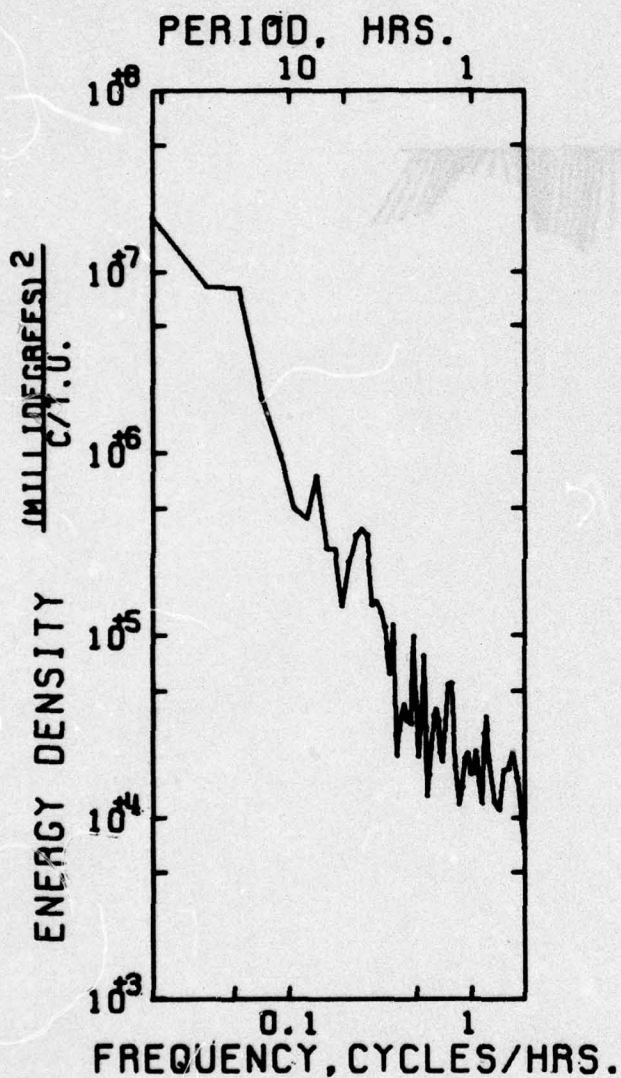
EAST & NORTH

COVARIANCE * -2220.537 * SAMPLE SIZE = 2670 POINTS
STD. ERR. OF COVARIANCE * 947.408 *
STD. DEV. OF COVARIANCE * 48954.507 * SPANNING RANGE
CORRELATION COEFFICIENT * -.527E-1 * FROM 71- IV -28 00.00.55
VECTOR MEAN * 128.700 * TO 71- V -25 20.15.55
VECTOR VARIANCE * 42125.037 *
VECTOR STD. DEV. * 205.244 * DURATION 27.84 DAYS

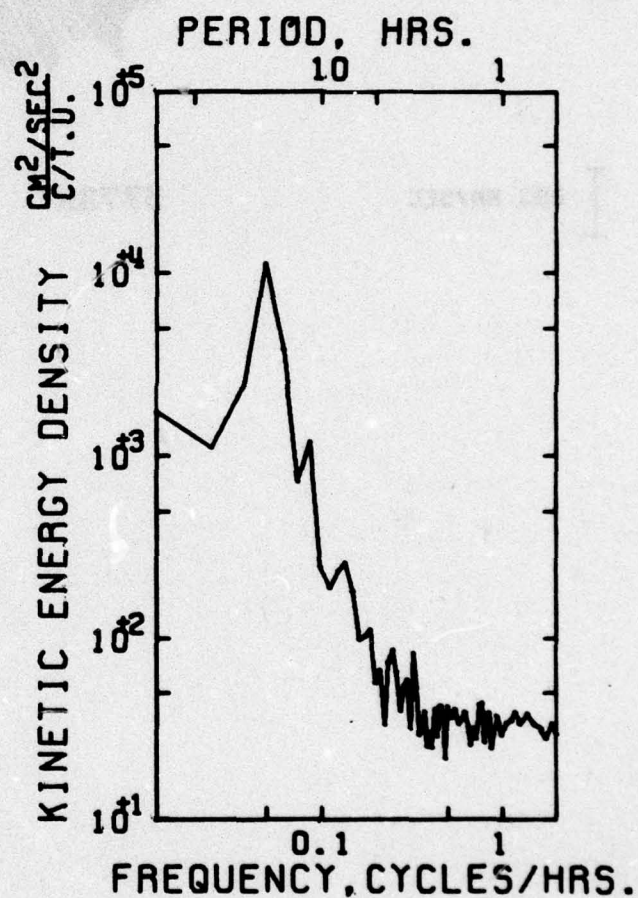
VARIABLE * TEMPERATURE
UNITS * DEGREES C.

MEAN * 11.283
STD. ERR. * .416E-1
VARIANCE * 3.153
STD. DEV. * 1.776
KURTOSIS * 1.456
SKEWNESS * .237
MINIMUM * 7.940
MAXIMUM * 14.159

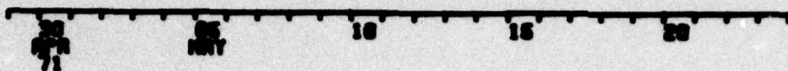
* SAMPLE SIZE = 1821 POINTS
*
* SPANNING RANGE
* FROM 71- V -05 14.15.55
* TO 71- V -24 13.15.55
*
* DURATION 18.96 DAYS



AUTO SPECTRUM
 3773L900TEMP TEMPERATURE
 10METERS
 71-V-05 TO 71-V-24
 1 PIECES WITH 900 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 3773K900 EAST COMP
 3773K900 NORTH COMP
 10METERS
 71-IV-28 TO 71-V-24
 1 PIECES WITH 1296 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

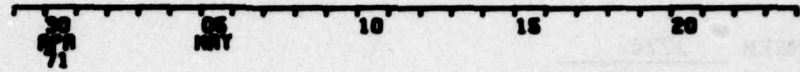


EAST



200 MM/SEC

3773K

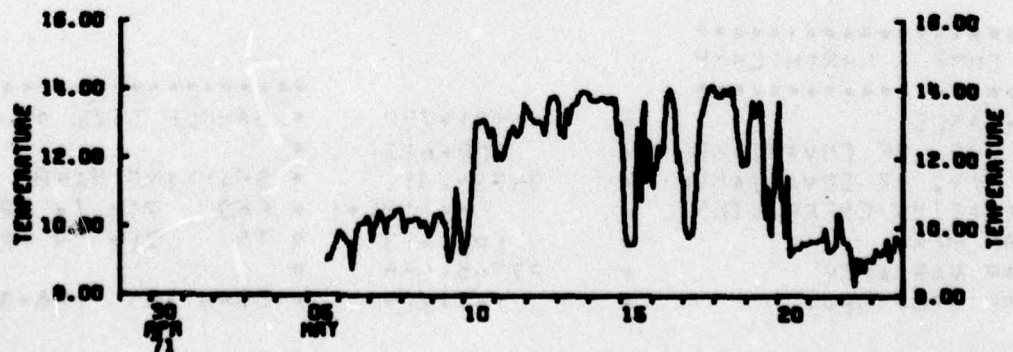
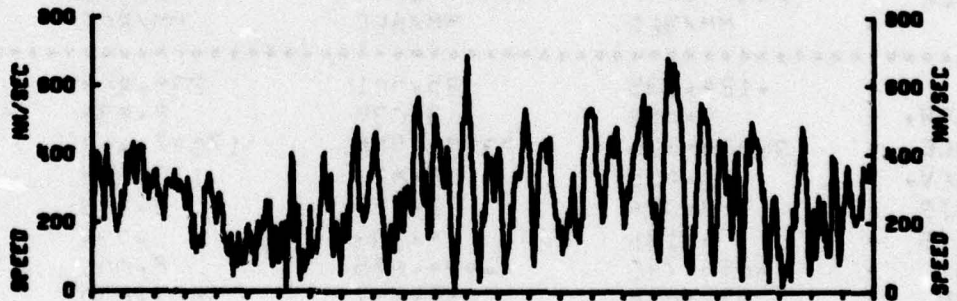
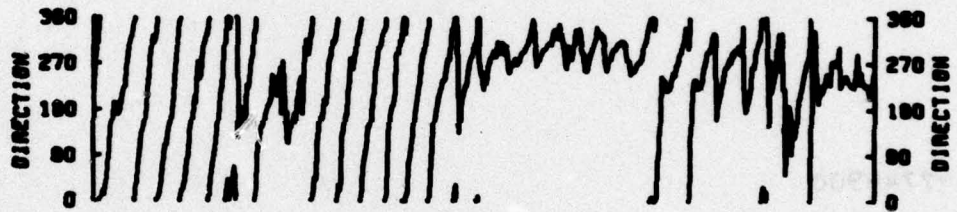


NORTH



200 MM/SEC

3773K



DATA NUMBER 3774

Instrument no. V-0102

Inst. depth 12

Float depth -0-

Water depth 2665

Instrument sampling scheme

X VACM accumulated averages every 900 sec

Model 850 data bursts every sec

sampled at sec

for samples

COMMENTS

DATA/ 3774H900

VARIABLE * EAST CMP NORTH CMP SPEED TEMPERATURE
UNITS * MM/SEC MM/SEC MM/SEC DEGREES C.

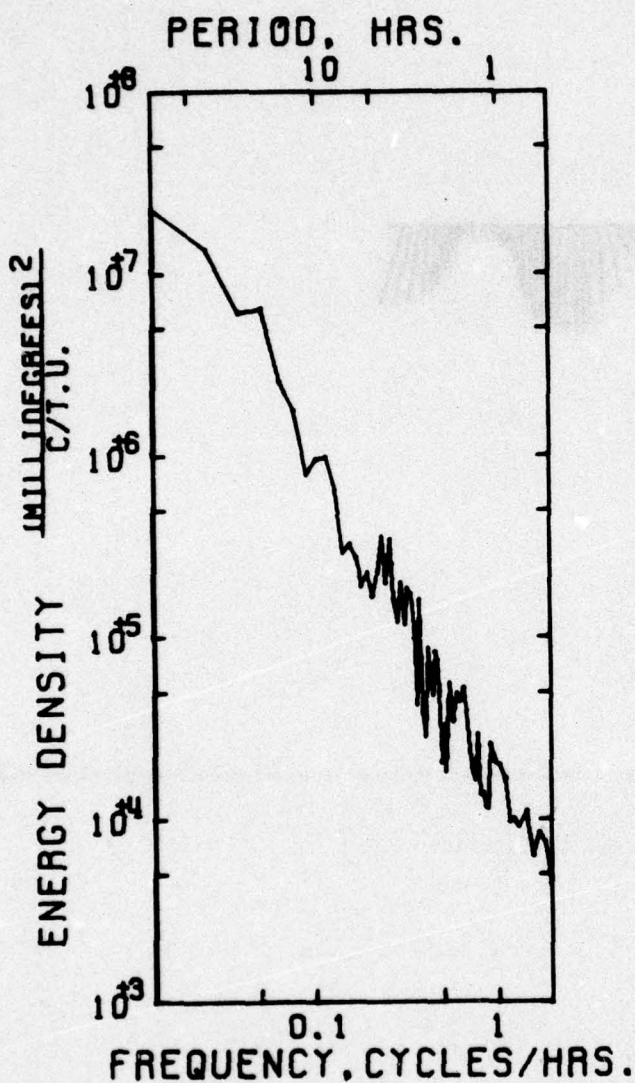
MEAN * -124.835 25.501 234.804 10.223
STD. ERR. * 3.592 3.035 2.596 .438E-1
VARIANCE * 32636.326 23294.986 17037.442 4.846
STD. DEV. * 180.655 152.627 130.528 2.201
KURTOSIS * 3.076 2.771 3.313 1.790
SKEWNESS * -.185 -.253 .734 .216
MINIMUM * -695.740 -424.675 8.000 6.167
MAXIMUM * 392.658 450.657 697.000 13.895

EAST CMP & NORTH CMP

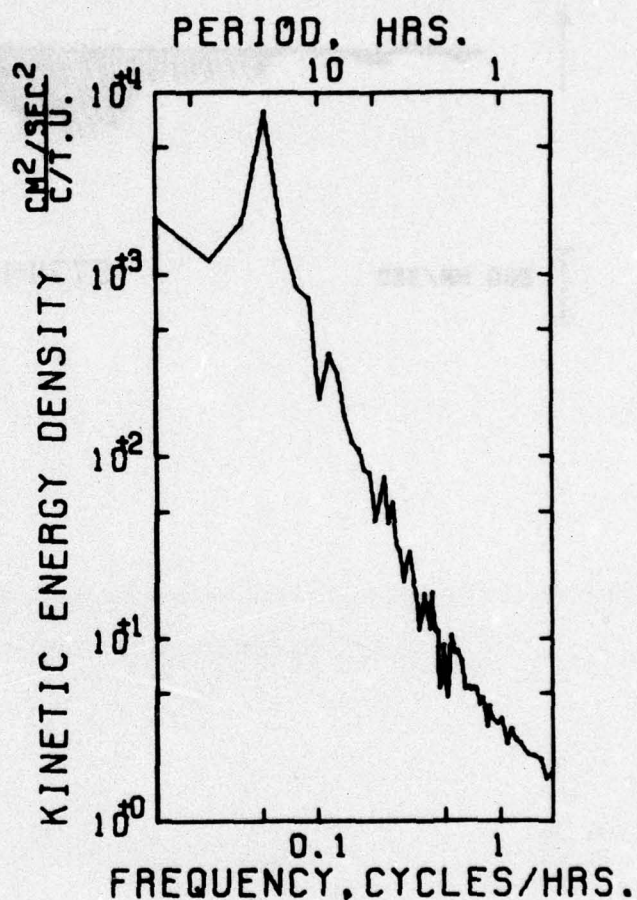
COVARIANCE *
STD. ERR. OF COVARIANCE *
STD. DEV. OF COVARIANCE *
CORRELATION COEFFICIENT *
VECTOR MEAN *
VECTOR VARIANCE *
VECTOR STD. DEV. *

-1981.752
702.623
35334.311
-.719E-1
127.413
27965.656
167.229

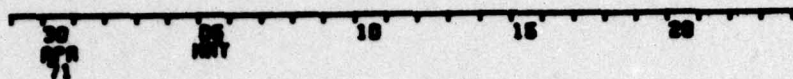
* SAMPLE SIZE * 2529 PRINTS
*
* SPANNING RANGE
* FROM 71- IV -28 06.00.00
* TO 71- V -24 14.00.00
*
* DURATION 26.33 DAYS



AUTO SPECTRUM
3774H900 TEMPERATURE
12 METERS
71-IV-26 TO 71-V-24
1 PIECES WITH 1250 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
3774H900 EAST COMP
3774H900 NORTH COMP
12 METERS
71-IV-26 TO 71-V-24
1 PIECES WITH 1250 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS

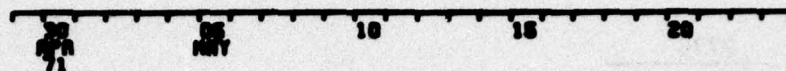


EAST



200 MM/SEC

3774H

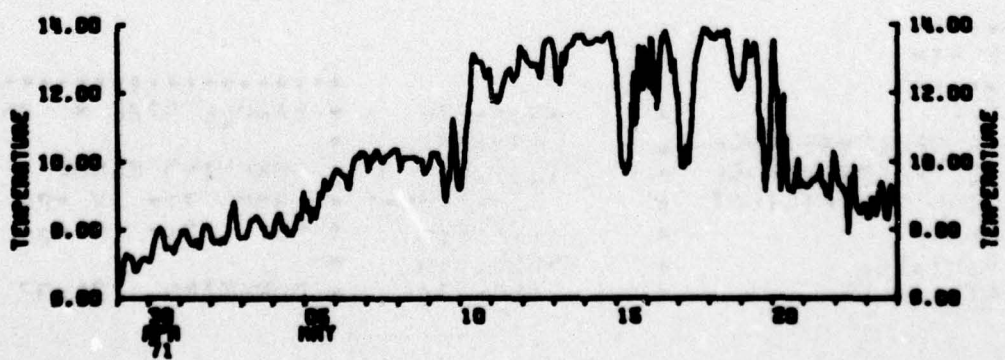


NORTH



200 MM/SEC

3774H



DATA NUMBER 3776

Instrument no. M-268

Inst. depth 21

Float depth -0-

Water depth 2665

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 900 sec

sampled at 5.27 sec

for 23 samples

COMMENTS

DATA/ 37760900

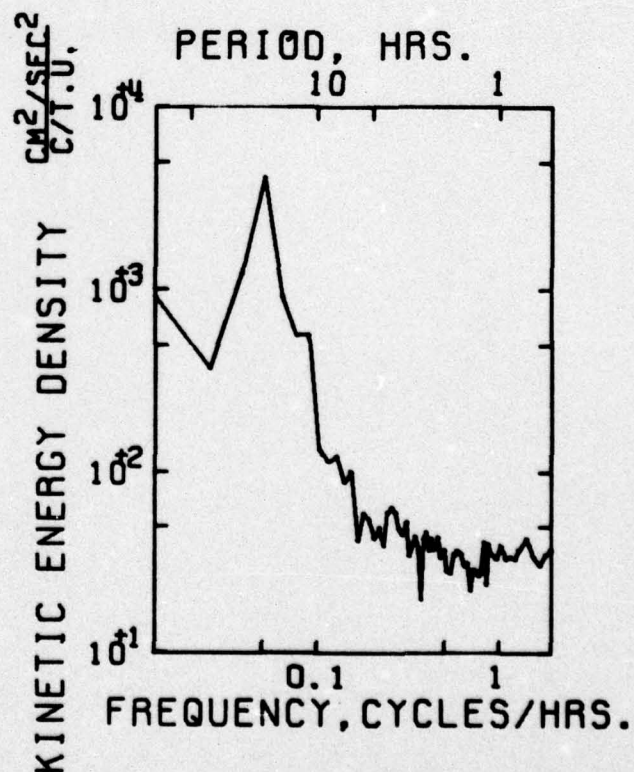
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      -117.714      -0.429      225.479
STD. ERR. =           3.298           3.024      2.322
VARIANCE  =      27491.780      23119.399      13627.273
STD. DEV. =           165.806           152.051      116.736
KURTOSIS  =           2.797           2.817           3.296
SKEWNESS  =           -0.722E-1      -0.377E-1           .648
MINIMUM   =      -699.347      -505.534           7.000
MAXIMUM   =           359.071           516.378      707.000
*****
```

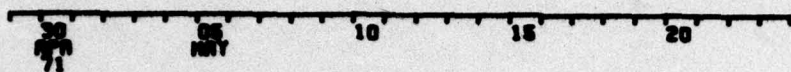
EAST & NORTH

```
COVARIANCE      =      -308.276
STD. ERR. OF COVARIANCE      =           623.891
STD. DEV. OF COVARIANCE      =      31271.523
CORRELATION COEFFICIENT      =           -0.122E-1
VECTOR MEAN      =           117.715
VECTOR VARIANCE  =      25305.569
VECTOR STD. DEV. =           159.077
```

```
*****
* SAMPLE SIZE = 2528 PRINTS
*
* SPANNING RANGE
* FROM 71- IV -24 06.00.57
* TO 71- V -24 13.45.57
*
* DURATION 26.32 DAYS
*****
```


AUTO SPECTRUM
 3776G900 EAST COMP
 3776G900 NORTH COMP
 21 METERS
 71-IV-28 TO 71-V-24
 1 PIECES WITH 1250 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



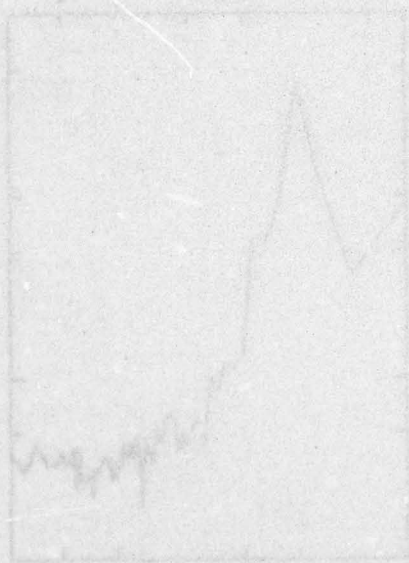


EAST

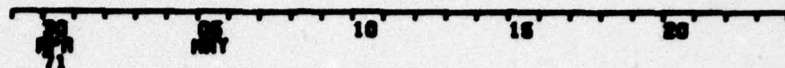


200 MM/SEC

3776G



ROTARY SPECTRUM
 3776600 EAST COMP
 3776600 NORTH COMP
 51 METERS
 71-14-20 TO 71-9-20
 1 PIECE WITH 1520 ESTIMATES
 1 FOR EACH AVERAGE OVER
 8 ADJACENT FREQUENCY BANDS

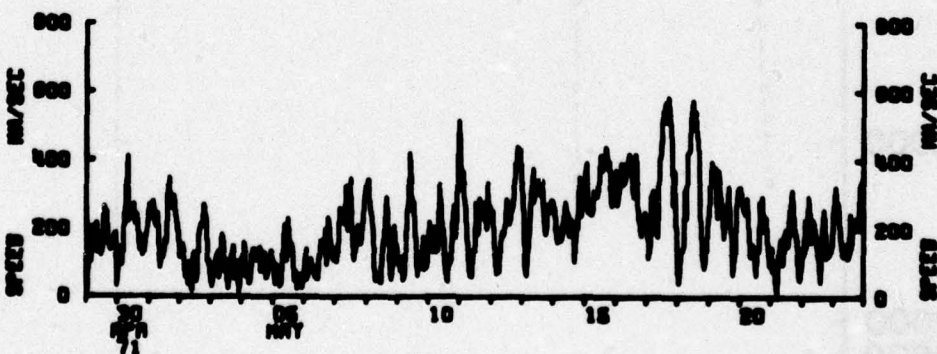
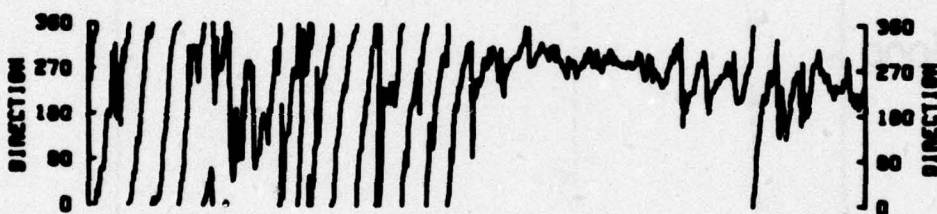


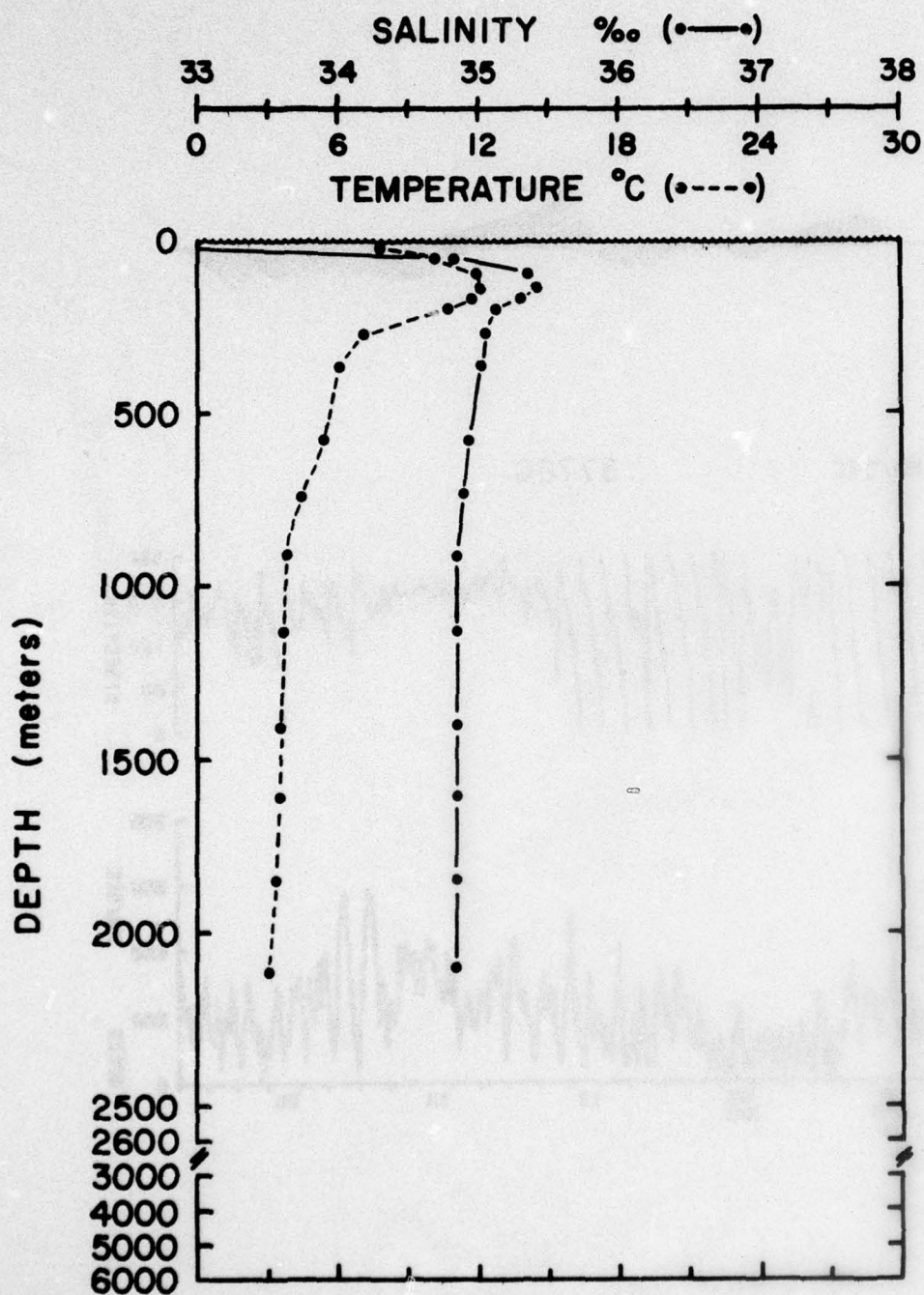
NORTH



200 MM/SEC

3776G

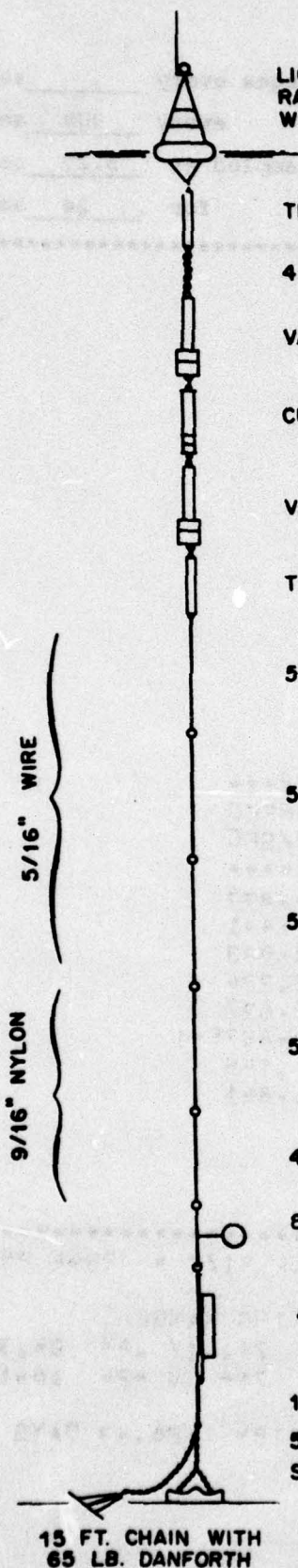




KN-020-069
LAT. 38°58.2'N
LONG. 70°00.0'W
DATE 71-05-9

MOORING NO. 378

Lat. 39° 07.7'N Long. 69° 59.6'W



LIGHT
RADIO
WIND RECORDER -- 3781

TENSIO METER,
TELEMETERING -- 3782

4 m CHAIN

VACM -- 3783

CURRENT METER -- 3784

VACM -- 3785

THERMOGRAPH -- 3786

500 m

500 m

500 m

527 m

407 m

85 m 5/8" NYLON WITH 26 GLASS
SPHERES EVENLY SPACED

ACOUSTIC RELEASE

15 m 3/4" NYLON

5m 1/2" CHAIN

STIMSON ANCHOR, 3000 LBS

15 FT. CHAIN WITH
65 LB. DANFORTH

Set April 27, 1971

Set by J. Gifford

Ship R. V. Knorr Cruise 20

Recovered May 24, 1971

Recovered by J. Gifford

Ship Cap'n Bill IV† Cruise

Mooring type - Surface

Purpose of mooring

A) Evaluation of the new Vector
Averaging Current Meter (VACM)

B) Current measurements at Site D

Data No.	Instr. Type	Depth (m)
3781*	Wind	-2
3782	Tel. tens.	2
3783*	VACM	8
3784*	Model 850	10
3785*	VACM	12
3786	Temp	13
Water depth		2665

Comments

† Private charter

DATA NUMBER 3781

Instrument no. W-101X * Instrument sampling scheme
Inst. depth -2 * VACM accumulated averages every sec
Float depth -0- * X Model 850 data bursts every 900 sec
Water depth 2665 * sampled at 5.27 sec
* for 24 samples

COMMENTS

DATA/ 3781-5900

VARIABLE * EAST NORTH SPEED
UNITS * CM/SEC CM/SEC CM/SEC

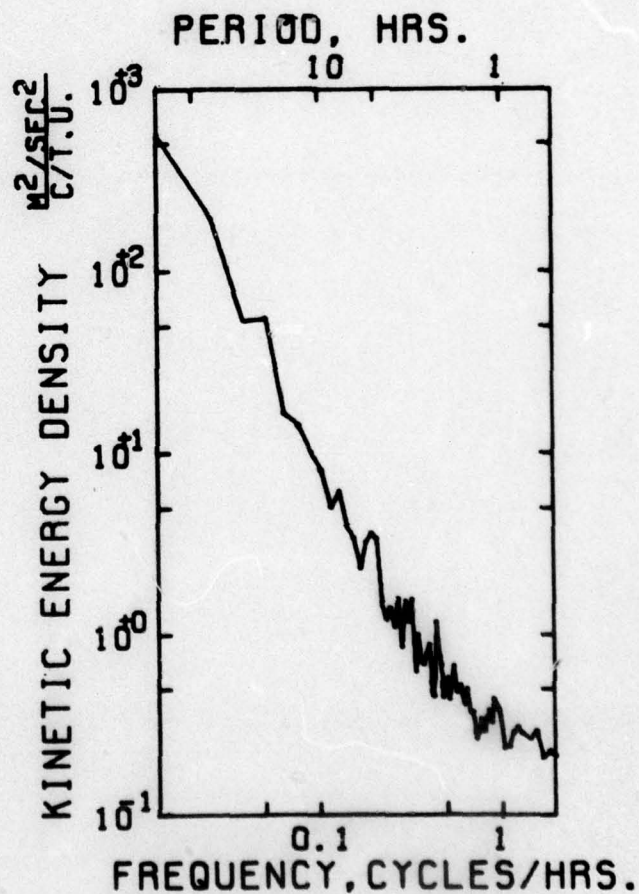
MEAN = 4.731 .301 55.877
STD. ERR. = .796 .883 .441
VARIANCE = 1610.251 1983.413 493.923
STD. DEV. = 40.128 44.536 22.224
KURTOSIS = 2.741 2.086 2.637
SKEWNESS = -.137 -.412E-1 .687E-1
MINIMUM = -119.700 -122.268 .158
MAXIMUM = 118.512 108.733 131.861

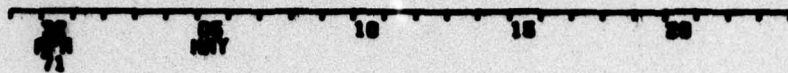
EAST & NORTH

COVARIANCE * -120.548
STD. ERR. OF COVARIANCE * 29.488
STD. DEV. OF COVARIANCE * 1487.305
CORRELATION COEFFICIENT * -.675E-1
VECTOR MEAN * 4.741
VECTOR VARIANCE * 1796.832
VECTOR STD. DEV. * 42.349

* SAMPLE SIZE = 2544 POINTS
*
* SPANNING RANGE
* FROM 71- IV -28 04.30.58
* TO 71- V -24 16.15.58
*
* DURATION 26.49 DAYS

AUTO SPECTRUM
 3781WF900 EAST
 3781WF900 NORTH
 WIND
 71-IV-28 TO 71-V-24
 1 PIECES WITH 1250 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





EAST

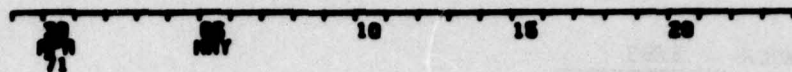


50 CM/SEC

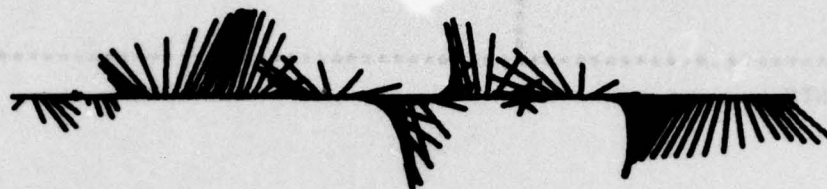
3781WF



DATE RECEIVED
 LOCATION
 TIME
 1. PLOTS WITH TWO ESTIMATES
 PER FILED. ORANGE 5.24
 2. ALIGNED FREQUENCY BANDS

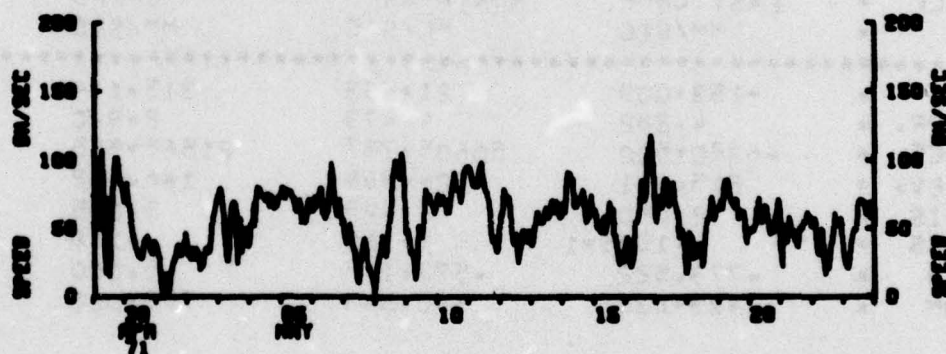


NORTH



50 CM/SEC

3781WF



DATA NUMBER 3783

Instrument no. V-0103

Inst. depth 8

Float depth -0-

Water depth 2665

Instrument sampling scheme

X VACM accumulated averages every 900 sec

Model 850 data bursts every sec

sampled at sec

for samples

COMMENTS

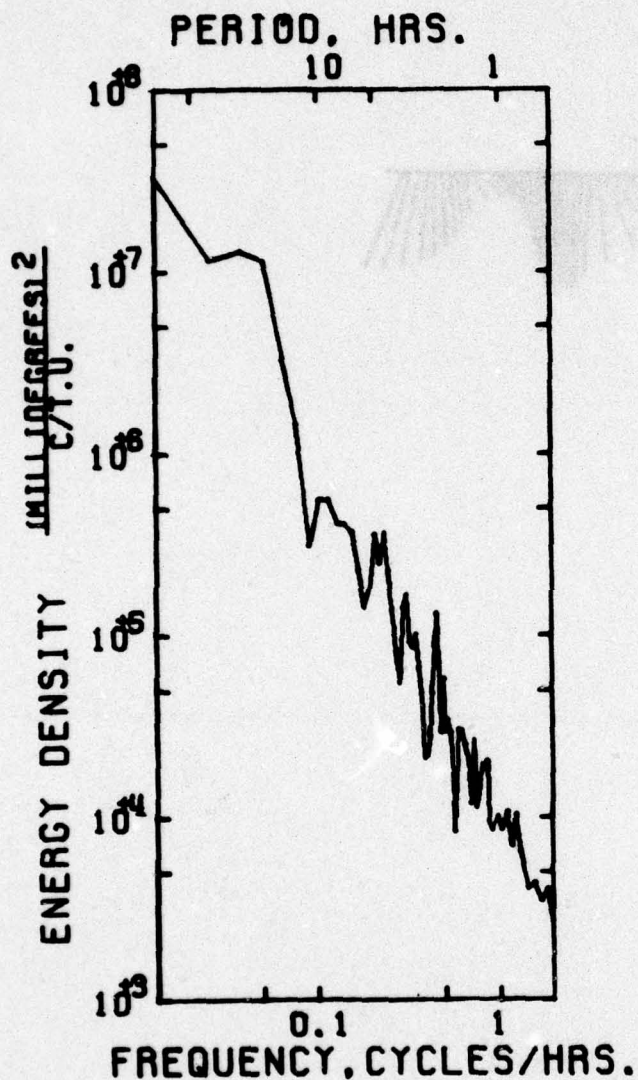
DATA/ 3783G900

```
*****
VARIABLE *   EAST COMP   NORTH COMP   SPEED   TEMPERATURE
UNITS    *   MM/SEC     MM/SEC      MM/SEC  DEGREES C.
*****
MEAN      *   -153.009    21.533    315.114    10.081
STD. ERR. *     4.282     4.473     2.920     .417E-1
VARIANCE  *  46380.500   50608.787  21568.585    4.400
STD. DEV. *   215.361    224.964    146.862    2.098
KURTOSIS  *     2.680     2.429     3.005     1.982
SKEWNESS  *     .150E-1   -.160     .366     .379
MINIMUM   *   -773.522   -573.125    5.000     6.250
MAXIMUM   *    429.630    590.543   778.000    13.959
*****
```

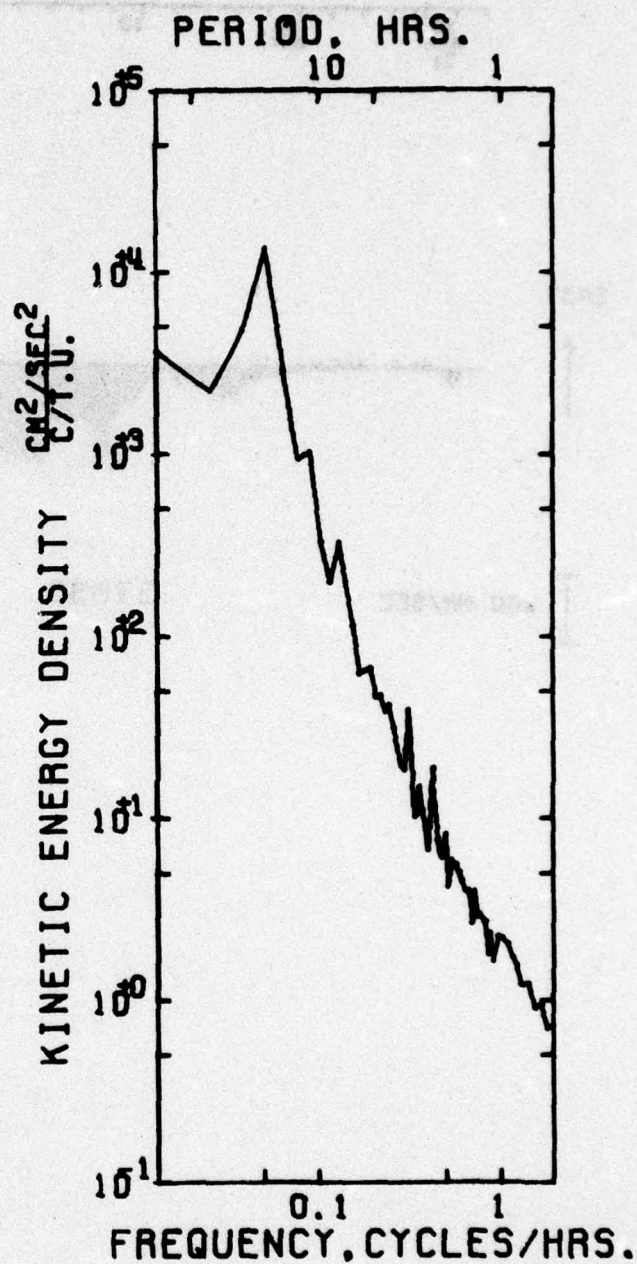
EAST COMP & NORTH COMP

```
COVARIANCE      *   -3057.614
STD. ERR. OF COVARIANCE *   1137.680
STD. DEV. OF COVARIANCE *  57212.953
CORRELATION COEFFICIENT *   -.631E-1
VECTOR MEAN      *   154.517
VECTOR VARIANCE   *  48494.643
VECTOR STD. DEV.  *   220.215
```

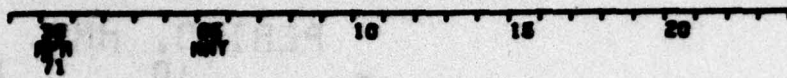
```
*****
* SAMPLE SIZE = 2529 POINTS
*
* SPANNING RANGE
* FROM 71- IV -28 06.00.00
* TO 71- V -24 14.00.00
*
* DURATION 26.33 DAYS
*****
```

AUTO SPECTRUM
3789G900 TEMPERATURE
8 METERS
71-IV-28 TO 71-V-24
1 PIECES WITH 1250 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
3789G900 EAST COMP
3789G900 NORTH COMP
8 METERS
71-IV-28 TO 71-V-24
1 PIECES WITH 1250 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



EAST



200 MM/SEC

3783G

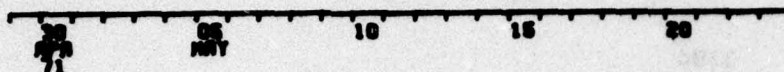


HYDROGRAPHIC DATA

HYDROGRAPHIC DATA

WAVE SPECTRUM
STATIONED EAST CAMP
STATIONED NORTH CAMP
8 METERS
11-14-58 TO 11-15-58
1 PIECES WITH 1000 CYCLES
PER PIECE. AVERAGED OVER
8 HOURS. FREQUENCY BANDS

WAVE SPECTRUM
STATIONED TEMPERATURE
8 METERS
11-14-58 TO 11-15-58
1 PIECES WITH 1000 CYCLES
PER PIECE. AVERAGED OVER
8 HOURS. FREQUENCY BANDS

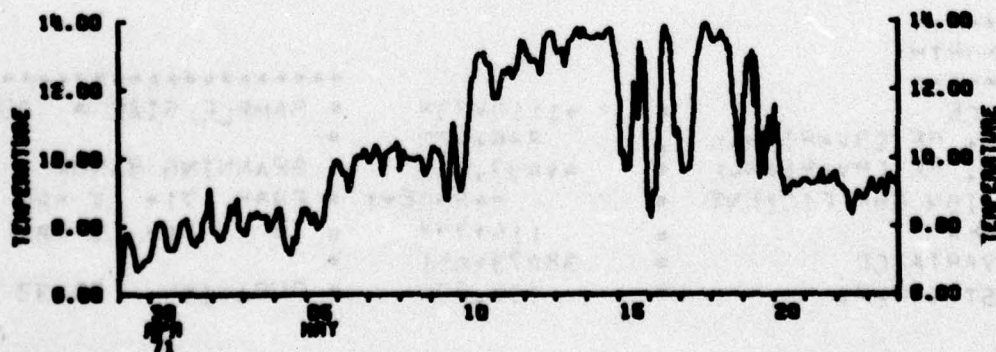
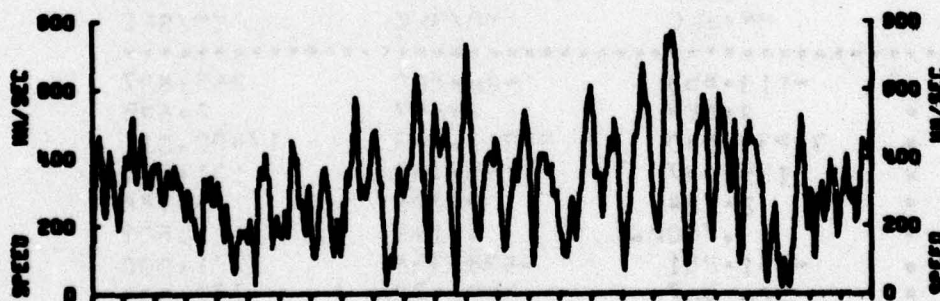


NORTH



200 NM/SEC

3783G



DATA NUMBER 3784

Instrument no. M-269

Inst. depth 10

Float depth -0-

Water depth 2665

*** Instrument sampling scheme

*** VACM accumulated averages every sec

*** X Model 850 data bursts every 900 sec

*** sampled at 5.27 sec

*** for 23 samples

COMMENTS

DATA/ 37840900

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

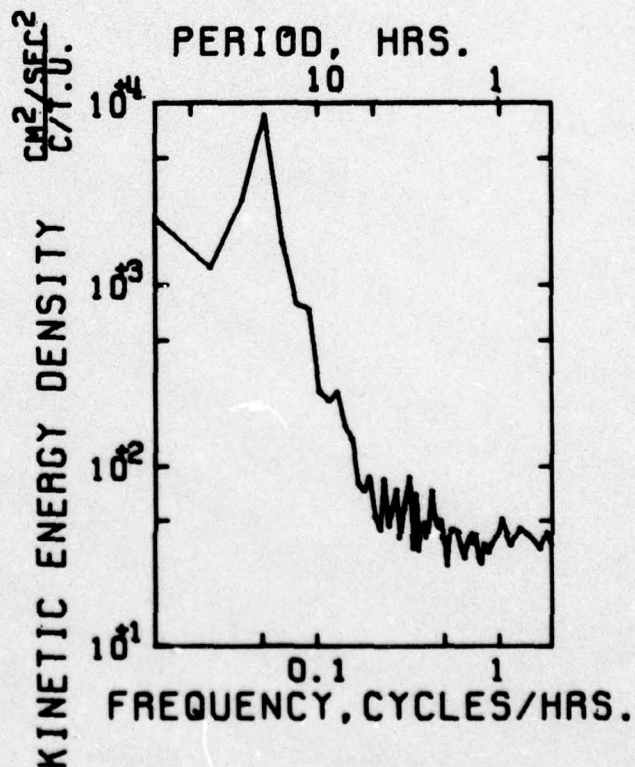
MEAN = -113.853 -26.907 269.837
STD. ERR. = 3.889 3.893 2.625
VARIANCE = 38234.840 38211.263 17420.011
STD. DEV. = 195.537 195.733 131.985
KURTOSIS = 2.724 2.726 3.186
SKEWNESS = .780E-1 -.142 .501
MINIMUM = -751.281 -638.358 1.000
MAXIMUM = 520.307 522.472 772.000

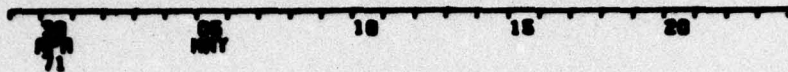
EAST & NORTH

CHVARIANCE = -1110.738
STD. ERR. OF CHVARIANCE = 226.520
STD. DEV. OF CHVARIANCE = 44573.558
CORRELATION COEFFICIENT = -.290E-1
VECTOR MEAN = 116.988
VECTOR VARIANCE = 38273.051
VECTOR STD. DEV. = 195.635

* SAMPLE SIZE = 2528 POINTS
*
* SPANNING RANGE
* FROM 71- IV -28 06:00:57
* TO 71- V -24 13:45:57
*
* DURATION 26.32 DAYS

AUTO SPECTRUM
 3784G900 EAST COMP
 3784G900 NORTH COMP
 10 METERS
 71-IV-28 TO 71-V-24
 1 PIECES WITH 1250 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



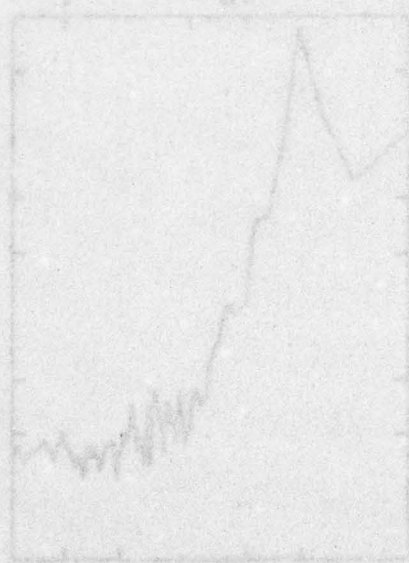


EAST

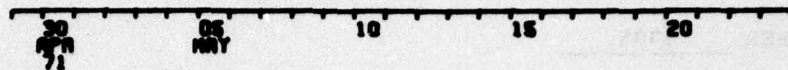


200 MM/SEC

3784G



AUTO SPECTRUM
 STATIONED EAST CAMP
 2100000 NORTH CAMP
 1000000
 71-14-59 TO 71-15-24
 1 PICTURE WITH 1500 ESTIMATES
 PER PICTURE OVERLAPPED OVER
 5 EQUIVALENT FREQUENCY BANDS

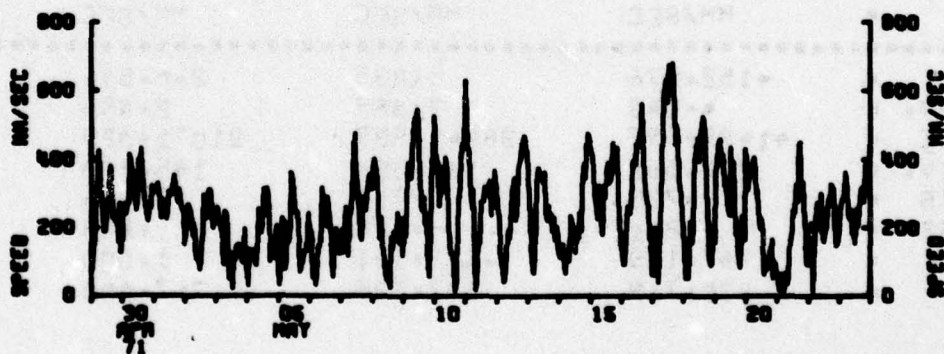


NORTH



200 MM/SEC

3784G



DATA NUMBER 3785

Instrument no. V-0104

Inst. depth 12

Float depth -0-

Water depth 2665

Instrument sampling scheme

X VACM accumulated averages every 900 sec

Model 850 data bursts every sec

sampled at sec

for samples

COMMENTS

DATA/ 3785G900A

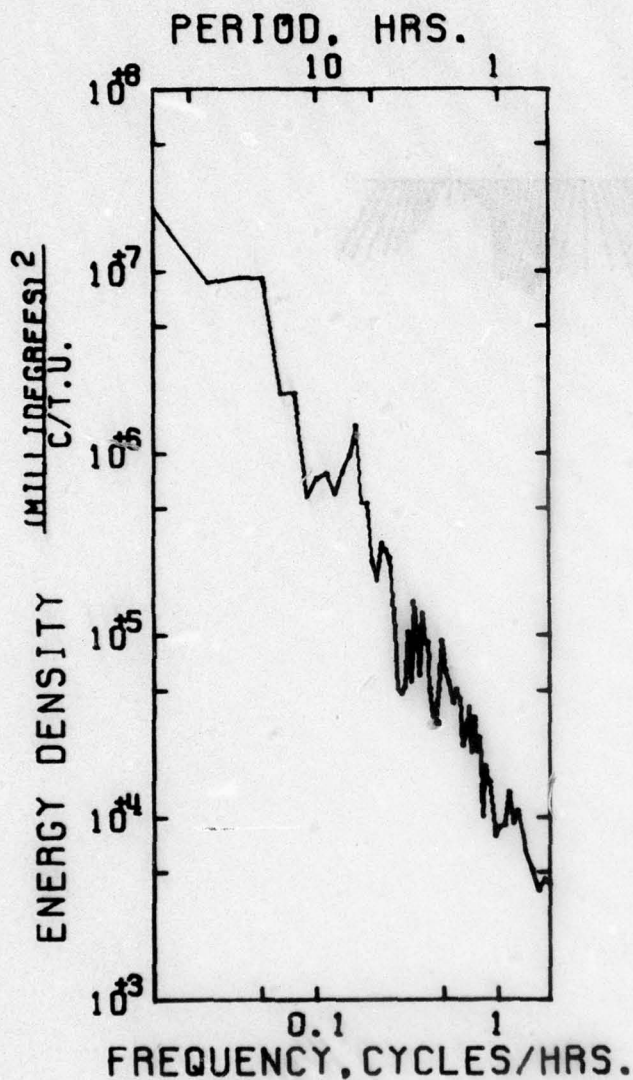
```
*****
VARIABLE *   EAST COMP   NORTH COMP   SPEED   TEMPERATURE
UNITS    *   MM/SEC     MM/SEC      MM/SEC  DEGREES C.
*****
MEAN      *   -152.976     5.835     286.516    10.245
STD. ERR. *    4.048      3.889     2.886     .426E-1
VARIANCE  *  41439.897   38241.539  21071.029    4.598
STD. DEV. *   203.568    195.554    145.159    2.144
KURTOSIS  *    2.735     2.712     3.116     1.792
SKEWNESS  *   -.211E-1   -.198     .485     .242
MINIMUM   *   -767.129   -572.151    1.000     6.272
MAXIMUM   *    430.719    527.595    767.000    13.980
*****
```

EAST COMP & NORTH COMP

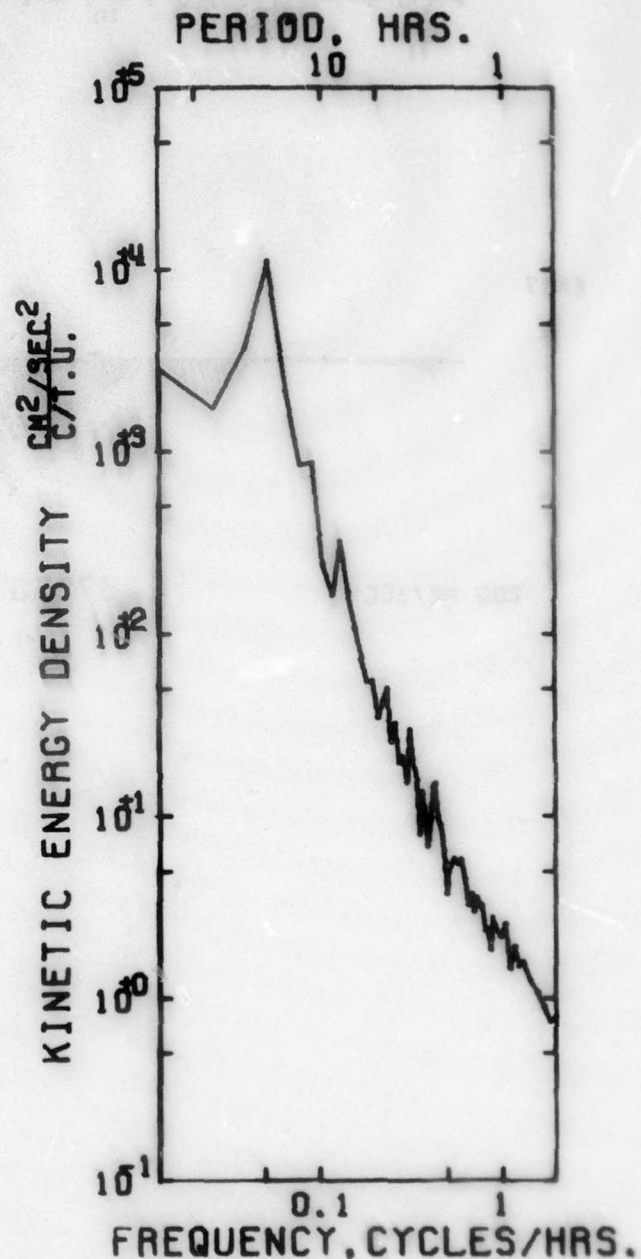
COVARIANCE
STD. ERR. OF COVARIANCE
STD. DEV. OF COVARIANCE
CORRELATION COEFFICIENT
VECTOR MEAN
VECTOR VARIANCE
VECTOR STD. DEV.

* -1815.116
* 1000.406
* 50309.564
* -.456E-1
* 153.088
* 39840.718
* 199.601

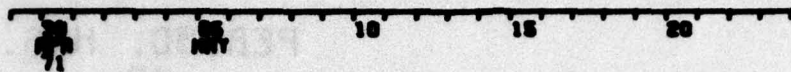
* SAMPLE SIZE = 2529 POINTS
*
* SPANNING RANGE
* FROM 71- IV =28 06.00.00
* TO 71- V =24 14.00.00
*
* DURATION 26.33 DAYS



AUTO SPECTRUM
 3785G900A TEMPERATURE
 12 METERS
 71-IV-28 TO 71-V-24
 1 PIECES WITH 1250 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 3785G900A EAST COMP
 3785G900A NORTH COMP
 12 METERS
 71-IV-28 TO 71-V-24
 1 PIECES WITH 1250 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

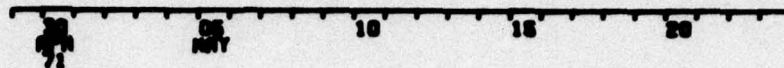


EAST



200 MM/SEC

3785G

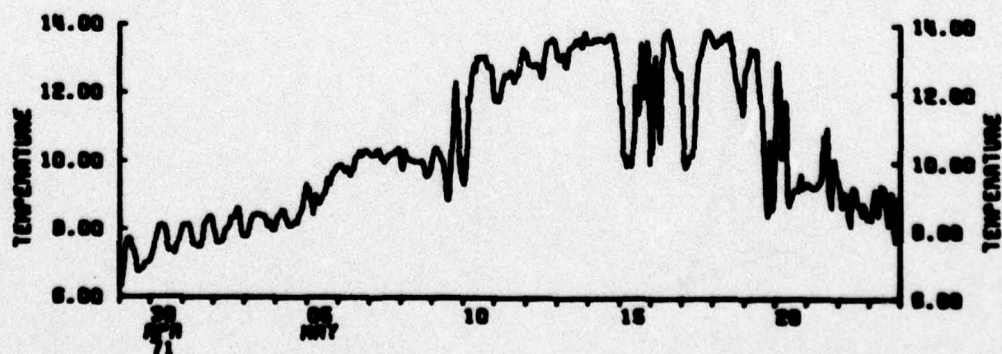
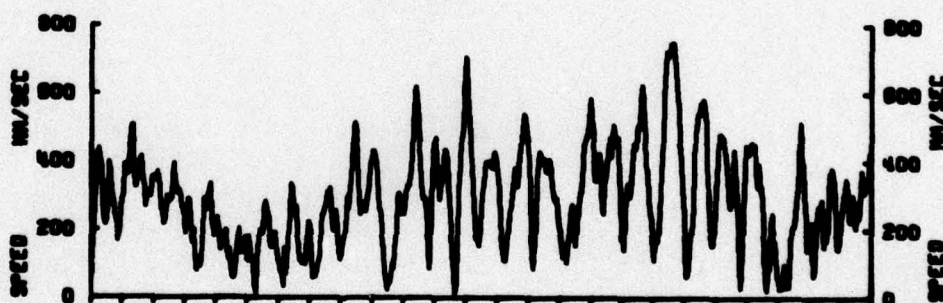
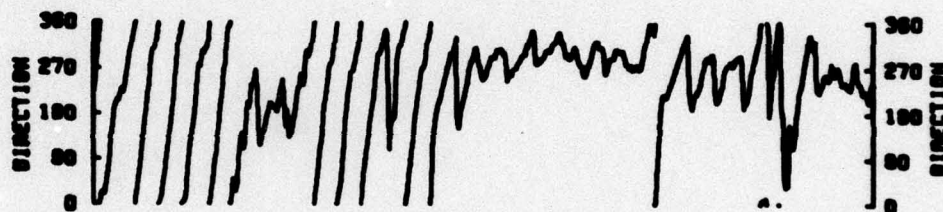


NORTH



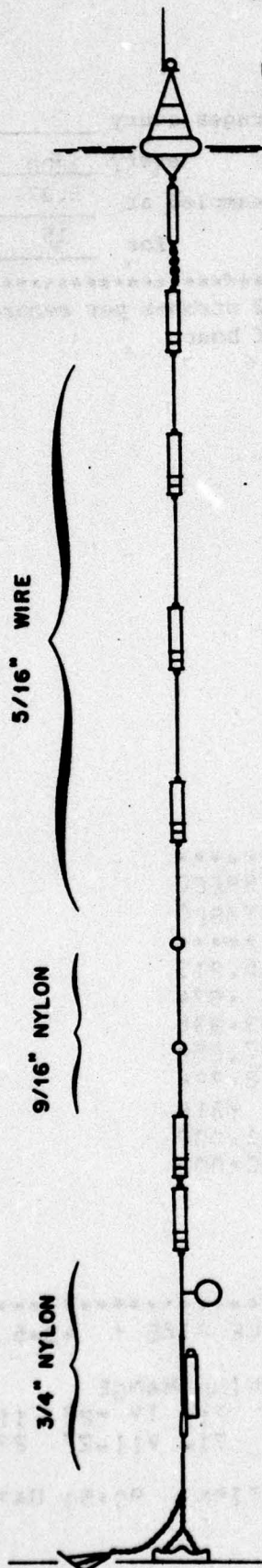
200 NM/SEC

3785G



MOORING NO. 379

Lat. 39° 08.6'N Long. 69° 58.7'W



LIGHT
RADIO
WIND RECORDER — 3791

TENSIOMETER,
TELEMETERING — 3792

10 m CHAIN

CURRENT METER — 3793

90 m

CURRENT METER — 3794

400 m

CURRENT METER — 3795

500 m

CURRENT METER — 3796

500m

523 m

415 m

DUMMY CURRENT METER CASE

CURRENT METER — 3797

85 m WITH 26 GLASS BALLS
in NETS

ACOUSTIC RELEASE,
TRANSPONDING

15 m

5m 1/2" CHAIN

STIMSON ANCHOR, 4000 LBS.

15 FT. CHAIN WITH
65 LB. DANFORTH

Set April 28, 1971

Set by J. Gifford

Ship R. V. Knorr Cruise 20

Recovered July 28, 1971

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 23

Mooring type - Surface

Purpose of mooring

Long term current measurements
at Site D

Data No.	Instr. Type	Depth (m)
3791*	Wind	0
3792	Tel. tens.	3
3793*	Model 850	15
3794	Model 850	107
3795*	Model 850	509
3796*	Model 850	1011
3797	Model 850	2555

Water depth 2662

Comments

3794 - upside down, no useable data

3797 - flooded

DATA NUMBER 3791

Instrument no. W-143X

Inst. depth -2

Float depth -0-

Water depth 2662

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 15 samples

COMMENTS - The instrument randomly changed from 15 to 32 strobes per record.

Time base should be good to within one half hour.

DATA/ 3791NF1800

VARIABLE * EAST NORTH SPEED
UNITS * DM/SEC DM/SEC DM/SEC

MEAN = 11.648 13.041 25.213
STD. ERR. = 1.000 .965 .574
VARIANCE = 4344.926 4043.848 1433.338
STD. DEV. = 65.916 63.591 37.859
KURTOSIS = 2.596 2.608 2.724
SKEWNESS = -.400 -.203 .314
MINIMUM = -189.292 -186.954 1.000
MAXIMUM = 175.374 208.834 260.000

EAST & NORTH

CHVARIANCE = 1042.256
STD. ERR. OF CHVARIANCE = 61.090
STD. DEV. OF CHVARIANCE = 4026.873
CORRELATION COEFFICIENT = .249
VECTOR MEAN = 17.486
VECTOR VARIANCE = 4194.387
VECTOR STD. DEV. = 64.764

* SAMPLE SIZE = 4345 POINTS

*

* SPANNING RANGE

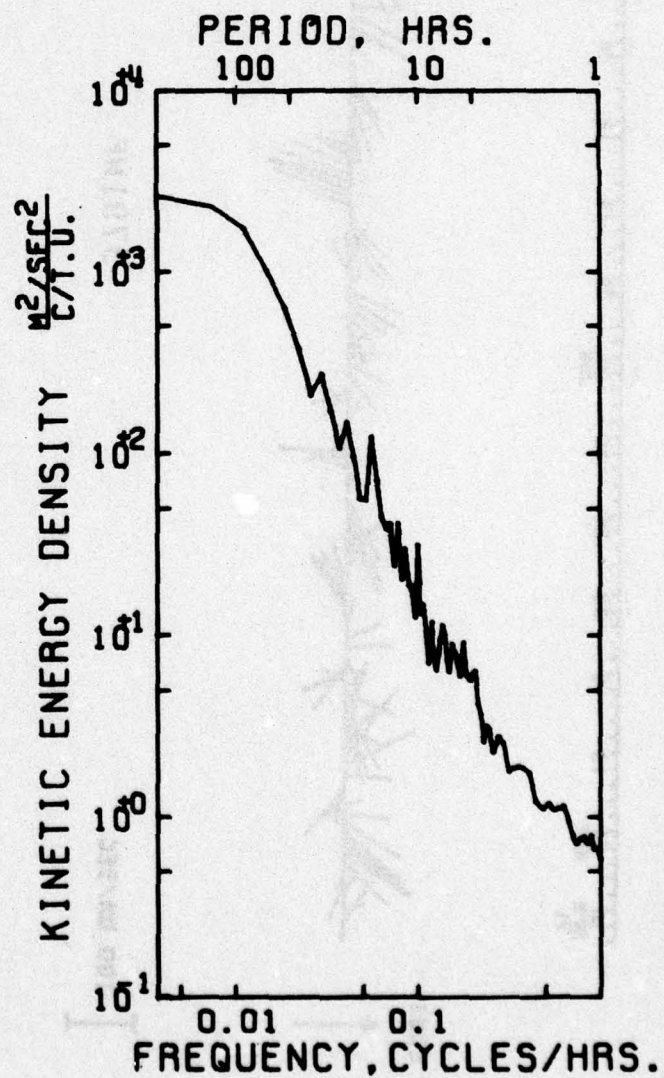
* FROM 71- IV -28 11.30.58

* TO 71- VII-27 23.30.58

*

* DURATION 90.50 DAYS

AUTO SPECTRUM
 3791WF1800 EAST COMP
 3791WF1800 NORTH COMP
 WIND
 71-IV-28 TO 71-VII-27
 1 PIECES WITH 2160 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





EAST



100 CM/SEC

3791WF

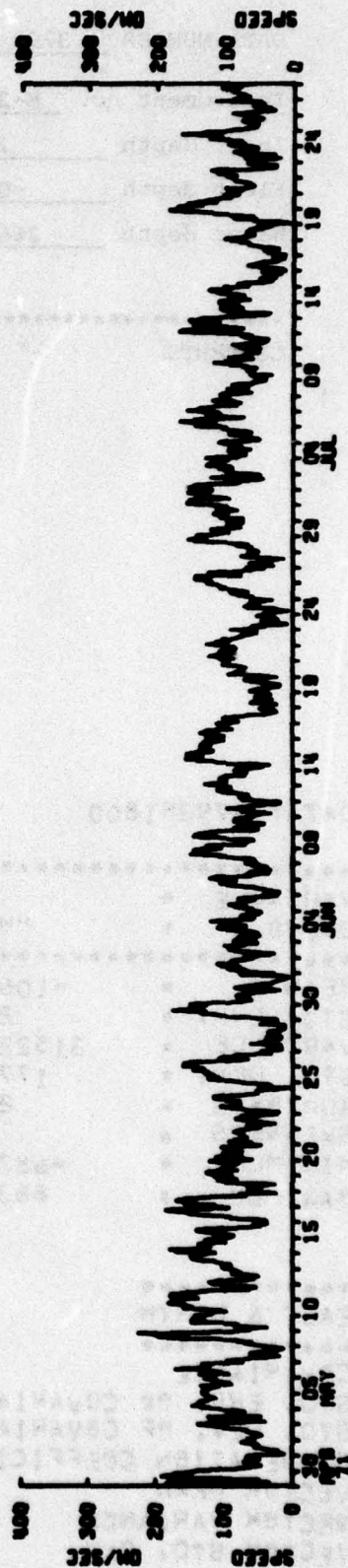


NORTH
↑



100 DM/SEC

3791WF



DATA NUMBER 3793

Instrument no. M-270

Inst. depth 15

Float depth -0-

Water depth 2662

Instrument sampling scheme

VACM accumulated averages every _____ sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 15 samples

COMMENTS

DATA/ 3793R1800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

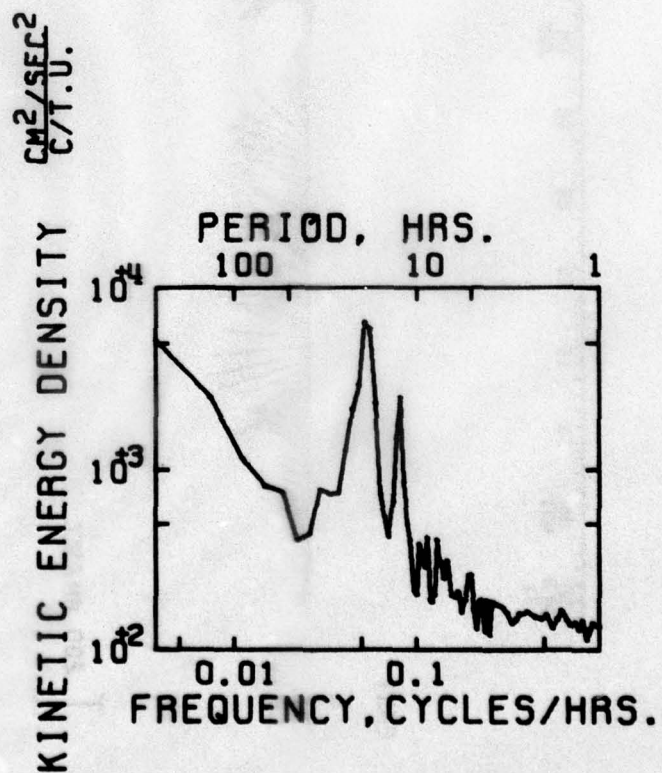
MEAN * -106.405 -16.594 256.128
STD. ERR. * 2.693 2.973 1.915
VARIANCE * 31522.580 38412.584 15931.241
STD. DEV. * 177.546 195.991 126.219
KURTOSIS * 2.938 2.830 3.130
SKEWNESS * .430E-1 -.368E-1 .524
MINIMUM * -687.753 -668.496 6.000
MAXIMUM * 663.011 724.077 735.000

EAST & NORTH

COVARIANCE * .277.537
STD. ERR. OF COVARIANCE * 597.069
STD. DEV. OF COVARIANCE * 39356.788
CORRELATION COEFFICIENT * .798E-2
VECTOR MEAN * 107.692
VECTOR VARIANCE * 34967.582
VECTOR STD. DEV. * 186.996

* SAMPLE SIZE = 4345 POINTS
*
* SPANNING RANGE
* FROM 71- IV -28 15.00.36
* TO 71- VII-28 03.00.36
*
* DURATION 90.50 DAYS

AUTO SPECTRUM
 379381800 EAST COMP
 379381800 NORTH COMP
 15 METERS
 71-IV-28 TO 71-VII-27
 1 PIECES WITH 2100 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



30 25 20 15 10 05 00 05 10 15 20 25 30 35 40 45 50
MAY JUN JUL

ERST



200 MM/SEC

3793B

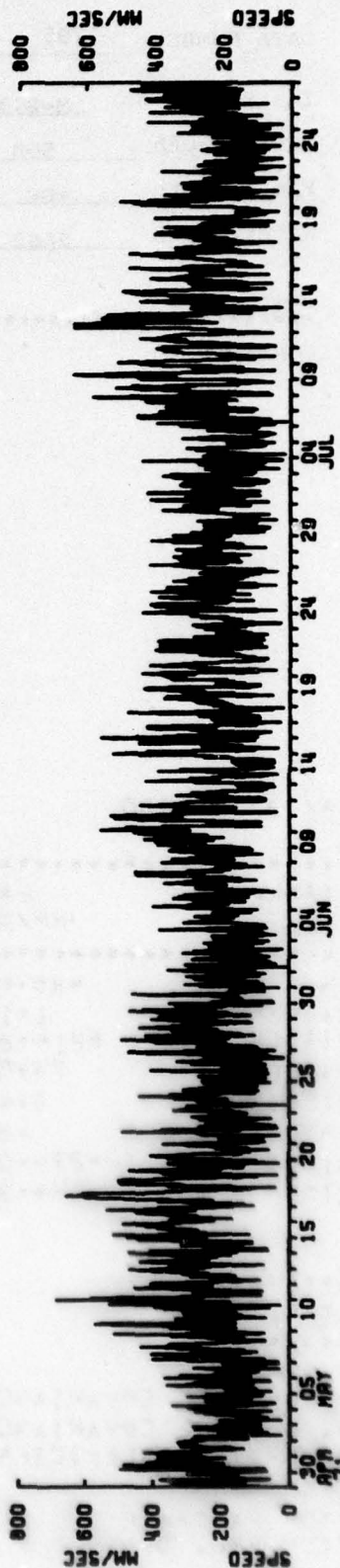
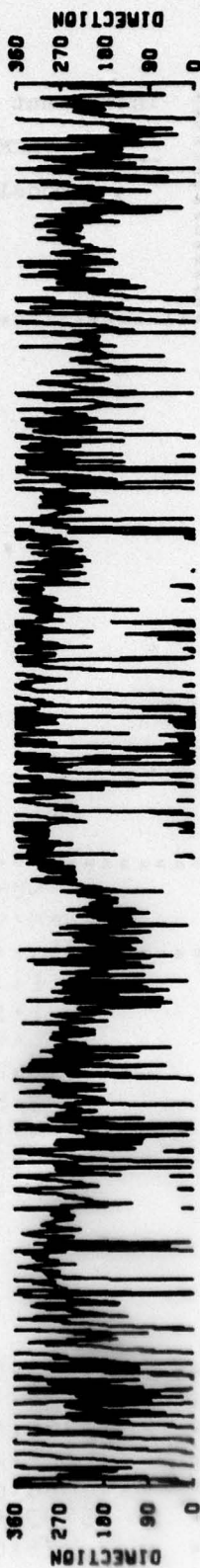


NORTH
↑



I 200 MM/SEC

3793B



DATA NUMBER 3795

Instrument no. M-213

Inst. depth 509

Float depth -0-

Water depth 2662

* Instrument sampling scheme

* VACM accumulated averages every sec

* x Model 850 data bursts every 1800 sec

* sampled at 5.27 sec

* for 16 samples

COMMENTS

DATA/ 3795M1800

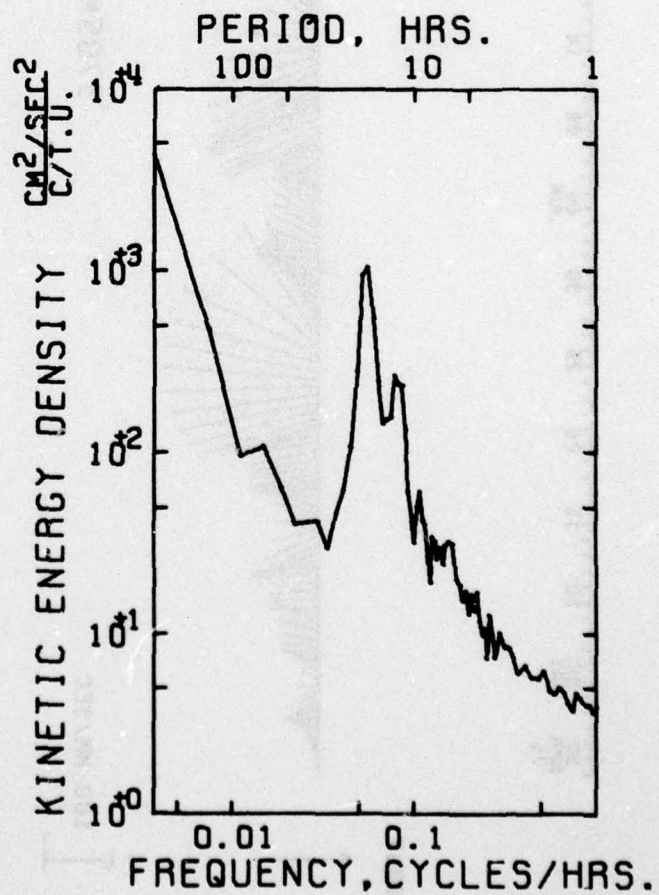
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      -86.650      1.788      127.944
STD. ERR. =      1.196      1.111      .792
VARIANCE  =      6214.242      5366.607      2722.615
STD. DEV. =      78.830      73.257      52.179
KURTOSIS  =      3.415      2.576      2.717
SKEWNESS  =      .595      -.179      .355
MINIMUM   =      -274.002      -239.381      4.000
MAXIMUM   =      184.388      216.443      234.000
*****
```

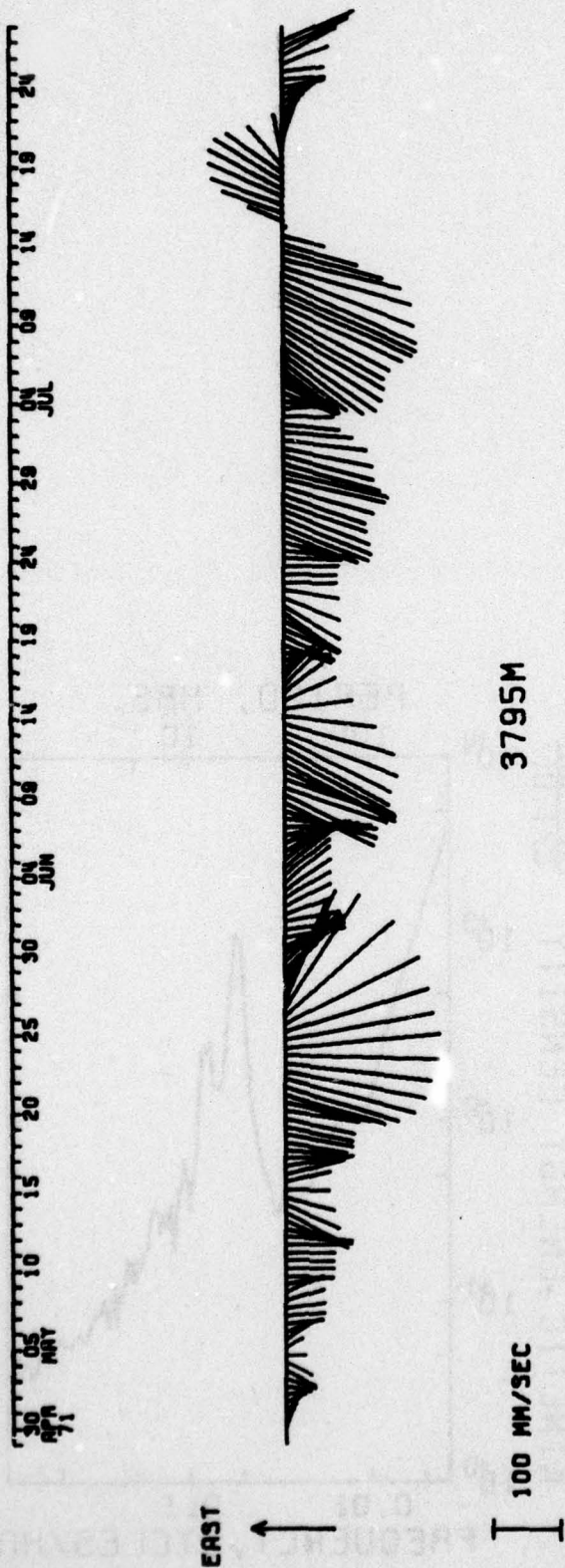
EAST & NORTH

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*****
COVARIANCE *      -1553.641
STD. ERR. OF COVARIANCE *      124.421
STD. DEV. OF COVARIANCE *      8201.424
CORRELATION COEFFICIENT *      -.269
VECTOR MEAN *      86.669
VECTOR VARIANCE *      5790.425
VECTOR STD. DEV. *      76.095
*****
```

```
*****
* SAMPLE SIZE = 4345 PRINTS
*
* SPANNING RANGE
* FROM 71- IV-28 15:00:37
* TO 71- VII-28 03:00:37
*
* DURATION 90.50 DAYS
*****
```

AUTO SPECTRUM
 3795M1800 EAST COMP
 3795M1800 NORTH COMP
 509 METERS
 71-IV-28 TO 71-VII-27
 1 PIECES WITH 2160 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





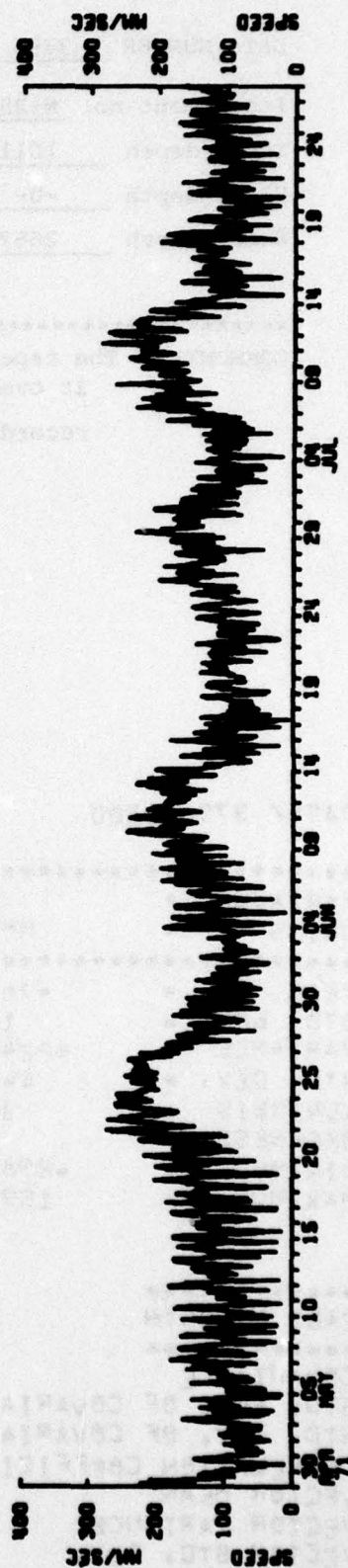


NORTH



3795M

100 NM/SEC



DATA NUMBER 3796

Instrument no. M-250

Inst. depth 1011

Float depth -0-

Water depth 2662

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 15 samples

COMMENTS - The tape recorder did not switch from channel A to channel B.
It overwrote the first few days of channel A causing a loss of
records at the beginning and the end of the data series.

DATA/ 3796C1800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

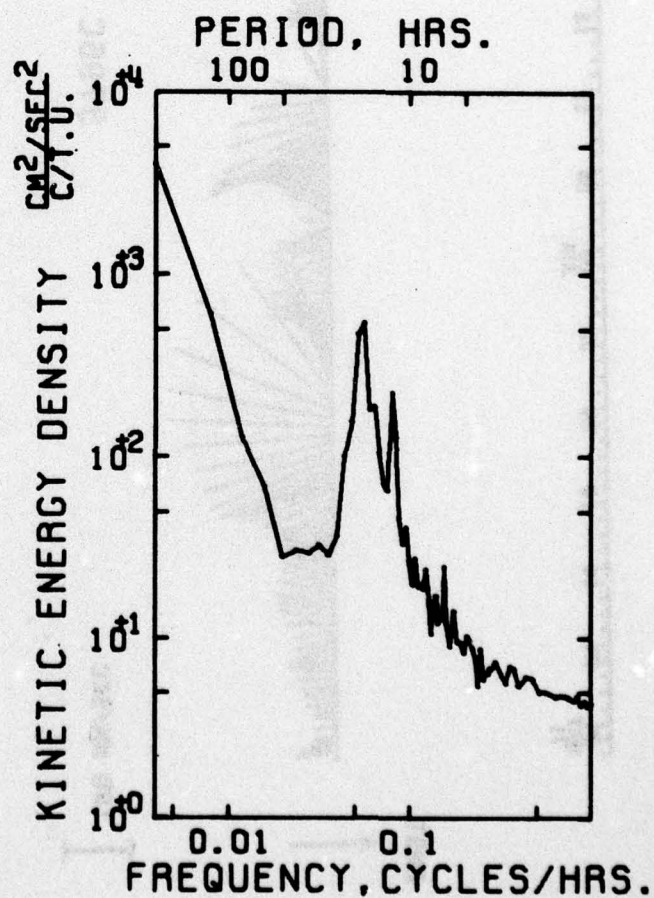
MEAN * -76.330 -3.232 107.899
STD. ERR. * 1.018 1.021 .810
VARIANCE * 4224.928 4249.833 2669.244
STD. DEV. * 64.999 65.191 51.665
KURTOSIS * 3.725 3.801 3.938
SKEWNESS * .527E-1 .503 .934
MINIMUM * -298.640 -271.771 2.000
MAXIMUM * 159.868 184.689 300.000

EAST & NORTH

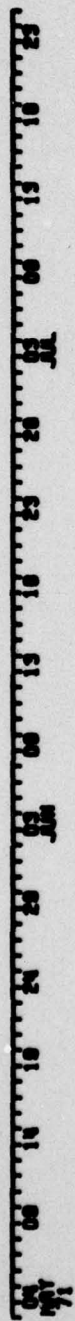
COVARIANCE * -746.008
STD. ERR. OF COVARIANCE * 105.749
STD. DEV. OF COVARIANCE * 6748.931
CORRELATION COEFFICIENT * .176
VECTOR MEAN * 76.398
VECTOR VARIANCE * 4237.381
VECTOR STD. DEV. * 65.095

* SAMPLE SIZE * 4073 POINTS
*
* SPANNING RANGE
* FROM 71- V .02 02.00.36
* TO 71- VII-25 22.00.36
*
* DURATION 84.83 DAYS

AUTO SPECTRUM
 3796C1800 EAST COMP
 3796C1800 NORTH COMP
 1011 METERS
 71-V-02 TO 71-VII-25
 1 PIECES WITH 2025 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



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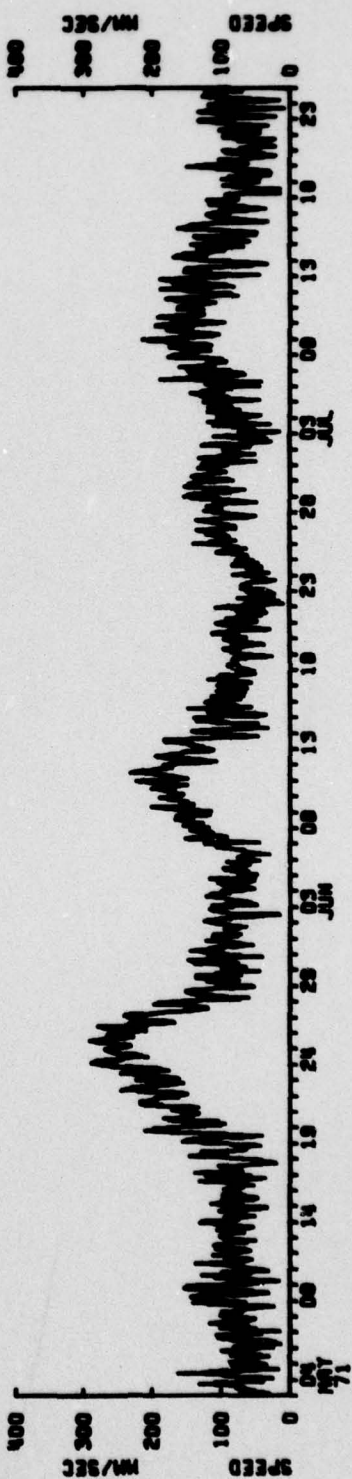


NORTH
↑



100 NM/SEC

3796C



MOORING NO. 380

Lat. 37° 19.5'N Long. 70° 21.5'W

Set April 30, 1971

Set by J. Gifford

Ship R. V. Knorr Cruise 20

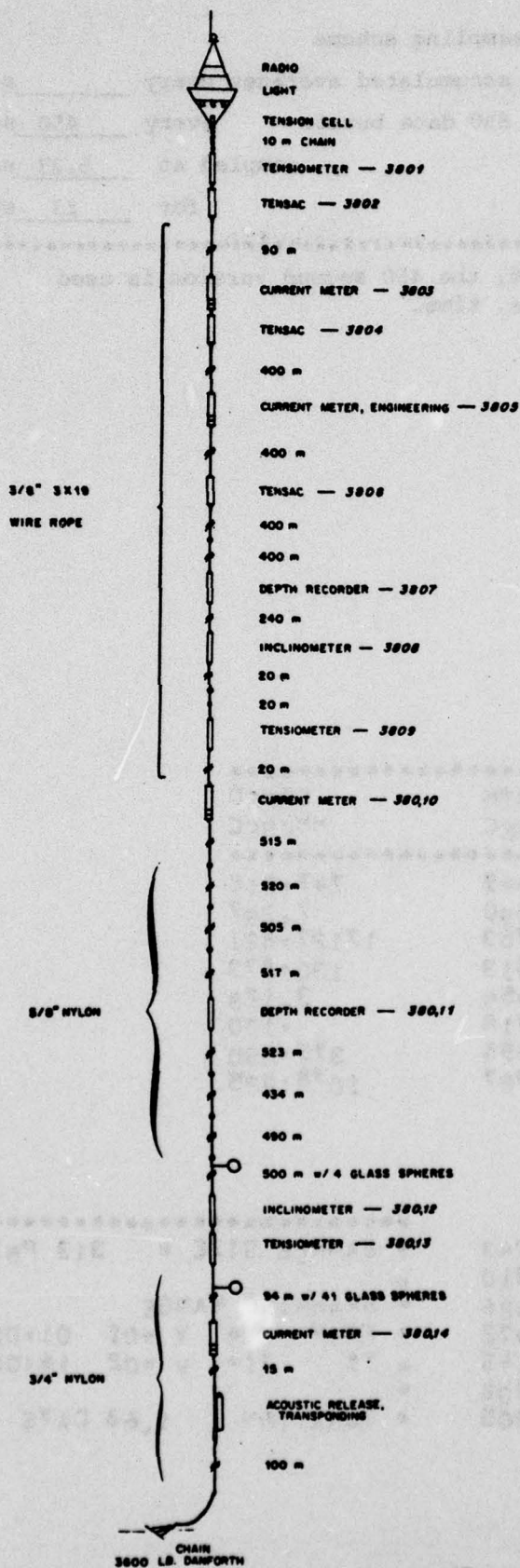
Recovered May 2, 1971

Recovered by J. Gifford

Ship R. V. Knorr Cruise 20

Mooring type - slack surface mooring
9' "Dumbo" float

Purpose of mooring
Gulf Stream study



Data No.	Instr. Type	Depth (m)
3801	Ten. rec.	13
3802	Tensac	15
3803*	Model 850	47
3804	Tensac	49
3805	(Special CM)	430
3806	Tensac	770
3807	Depth rec.	1360
3808	Incl.	1490
3809	Ten. rec.	1515
380,10	Model 850	1538
380,11	Depth rec.	2650
380,12	Incl.	4024
380,13	Ten. rec.	4025
380,14*	Model 850	4050

Water depth 4160

Comments

380,10 - rotor and vane standoff
were bent at launch

DATA NUMBER 3803

Instrument no. M-266

Inst. depth 47

Float depth -0-

Water depth 4160

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 450 sec

sampled at 5.27 sec

for 23 samples

COMMENTS - Because the data are so short, the 450 second version is used
to display all variables vs. time.

DATA/ 38038450

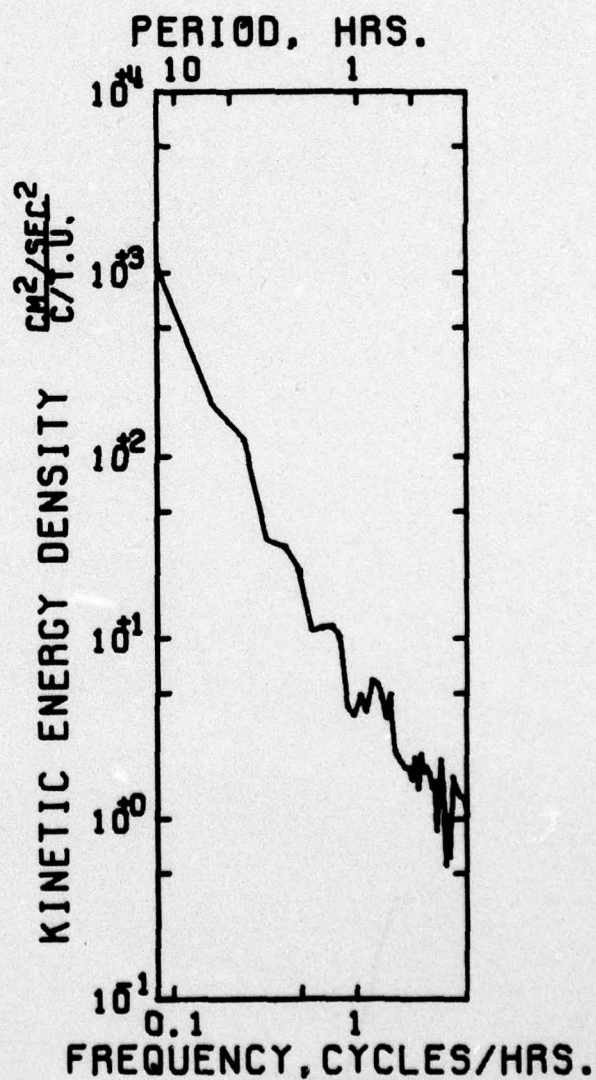
```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      *          679.963        -271.449        747.518
STD. ERR. *           5.059          10.090          7.397
VARIANCE  *        8011.063        31866.753       17127.821
STD. DEV. *         89.505         178.513        130.873
KURTOSIS  *          3.771          3.659          3.128
SKEWNESS  *          -0.762         -0.718          0.100
MINIMUM   *        346.105        -755.595        375.030
MAXIMUM   *        850.726         166.927       1078.225
*****
```

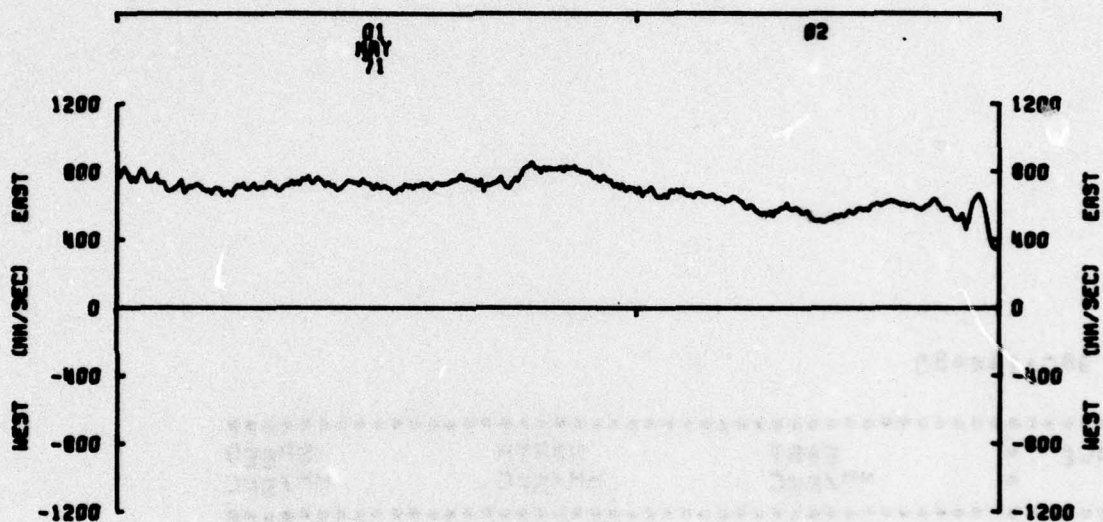
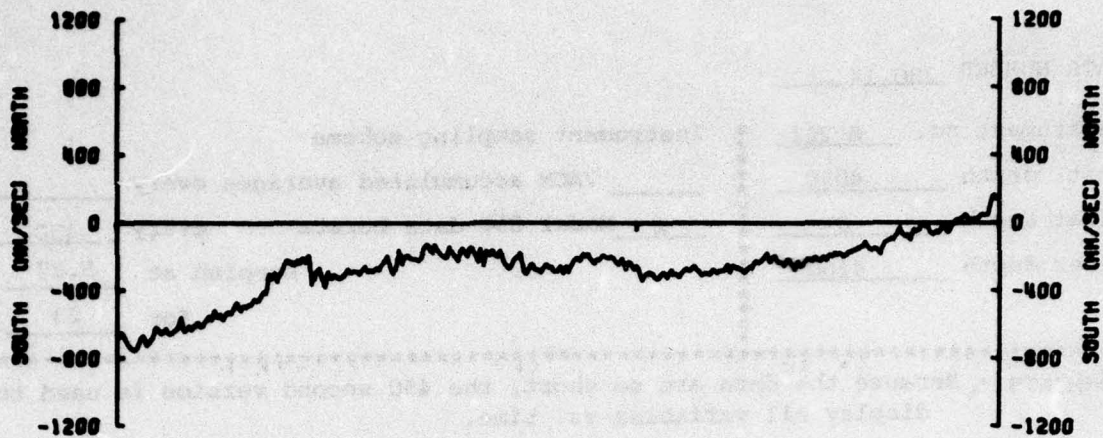
EAST & NORTH

```
COVARIANCE *          -7545.743
STD. ERR. OF COVARIANCE *          7478.910
STD. DEV. OF COVARIANCE *        132315.426
CORRELATION COEFFICIENT *           -0.472
VECTOR MEAN *          732.143
VECTOR VARIANCE *        19938.908
VECTOR STD. DEV. *         141.205
```

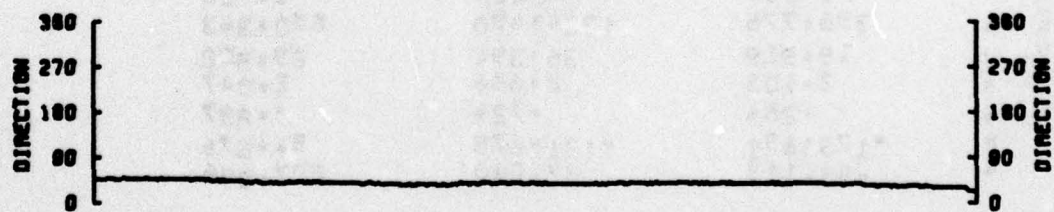
```
*****
* SAMPLE SIZE = 313 POINTS
*
* SPANNING RANGE
* FROM 71= V 01 01:00:57
* TO 71= V 02 16:00:57
*
* DURATION 1.63 DAYS
*****
```


AUTO SPECTRUM
 38038450 EAST COMP
 38038450 NORTH COMP
 47 METERS
 71-V-01 TO 71-V-02
 1 PIECES WITH 150 ESTIMATES
 PER PIECE. AVERAGED OVER
 3 ADJACENT FREQUENCY BANDS





3803B



DATA NUMBER 380.14

Instrument no. M-261 * Instrument sampling scheme
*
Inst. depth 4050 * VACM accumulated averages every sec
*
Float depth -0- * X Model 850 data bursts every 450 sec
*
Water depth 4160 * sampled at 5.27 sec
*
* for 23 samples

COMMENTS - Because the data are so short, the 450 second version is used to display all variables vs. time.

DATA/ 380.14#450

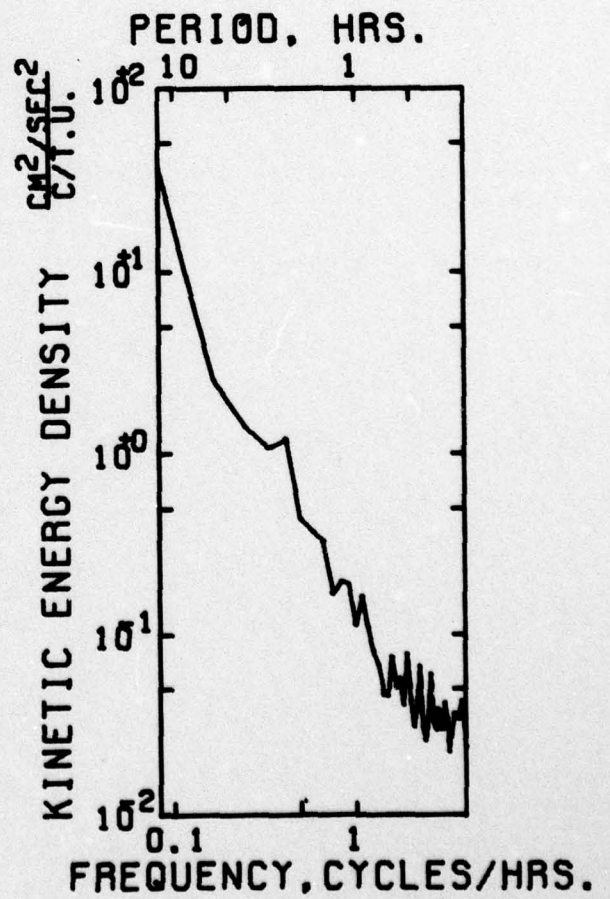
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -136.720    -65.517    154.388
STD. ERR. *          1.156      2.112      1.712
VARIANCE  *      396.776    1324.490    870.343
STD. DEV. *      19.919      36.394     29.502
KURTOSIS  *          2.103      2.686      2.047
SKEWNESS  *          .264       .724       .237
MINIMUM   *      -173.691    -121.475    94.576
MAXIMUM   *          89.113      37.090    207.996
*****
```

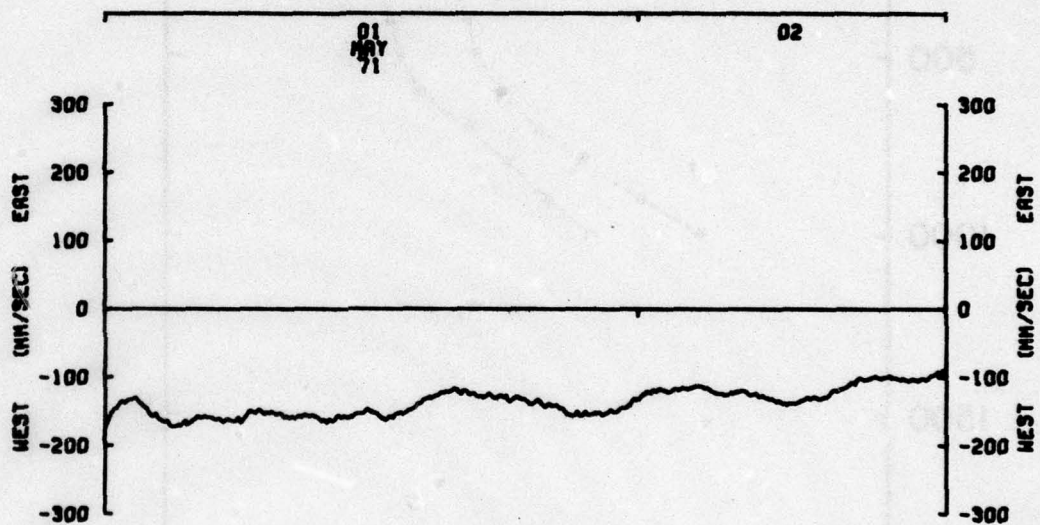
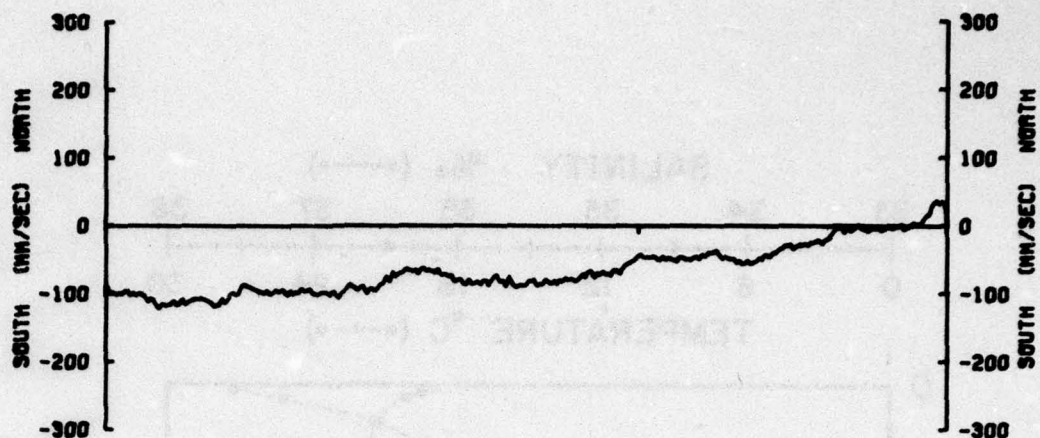
EAST & NORTH

```
COVARIANCE      *      603.628
STD. ERR. OF COVARIANCE *      334.280
STD. DEV. OF COVARIANCE *     5760.874
CORRELATION COEFFICIENT *          .833
VECTOR MEAN      *      151.607
VECTOR VARIANCE   *      860.633
VECTOR STD. DEV.  *      29.337
```

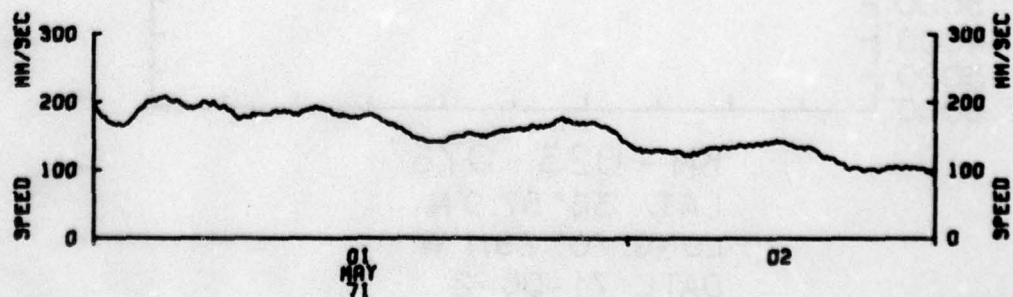
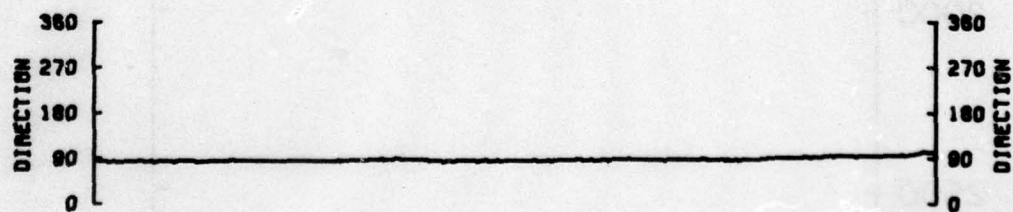
```
*****
* SAMPLE SIZE = 297 POINTS
*
* SPANNING RANGE
* FROM 71. V = 01 00.30.57
* TO 71. V = 02 13.30.57
*
* DURATION 1.54 DAYS
*****
```

AUTO SPECTRUM
 380.145450 EAST COMP
 380.145450 NORTH COMP
 4050 METERS
 71-V-01 TO 71-V-02
 1 PIECES WITH 144 ESTIMATES
 PER PIECE. AVERAGED OVER
 3 ADJACENT FREQUENCY BANDS





380,14\$



AD-A045 525

WOODS HOLE OCEANOGRAPHIC INSTITUTION MASS

F/G 8/3

A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)

UNCLASSIFIED

SEP 77 S TARBELL, A W WHITLATCH

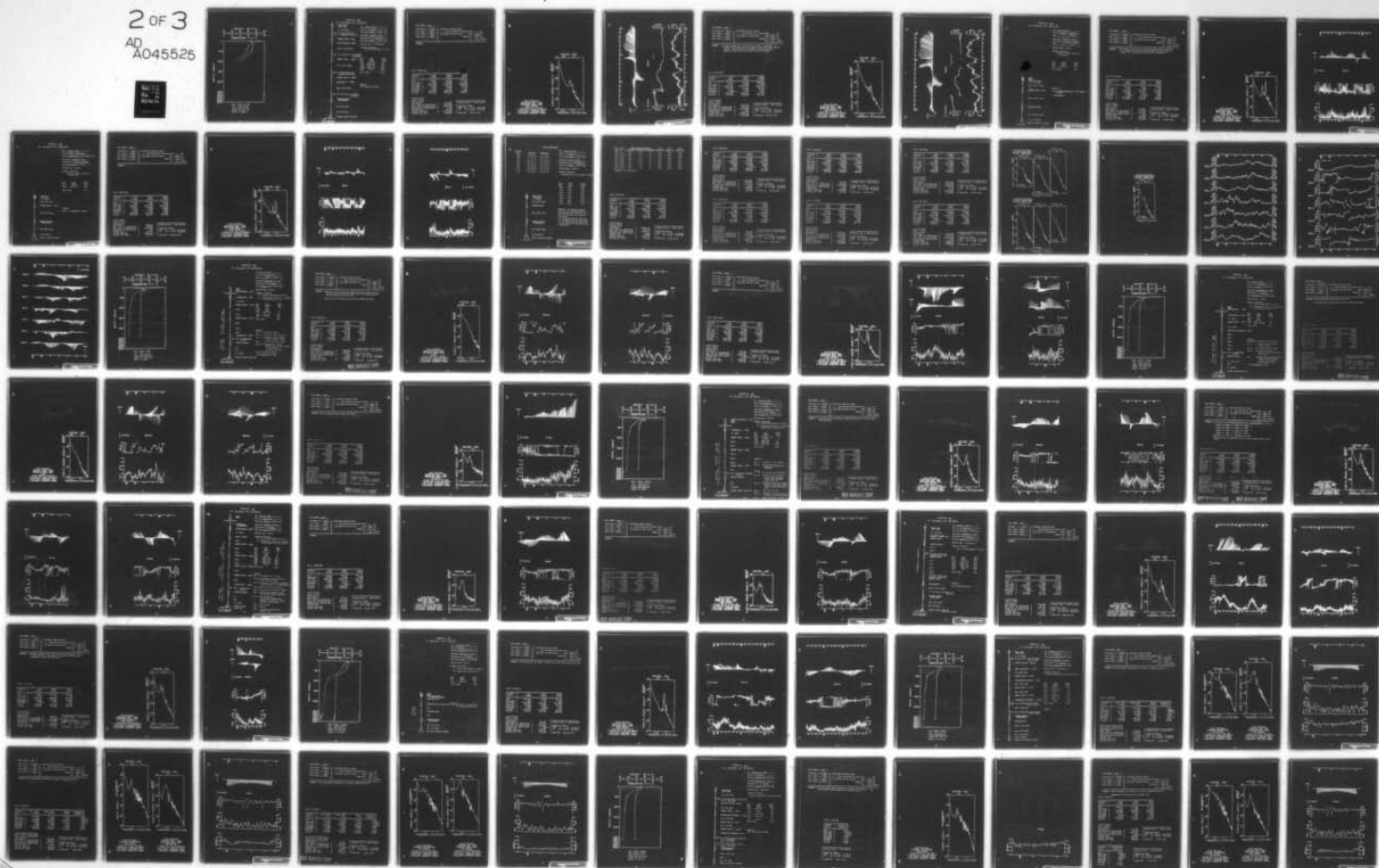
N00014-66-C-0241

WHOI-77-56

NL

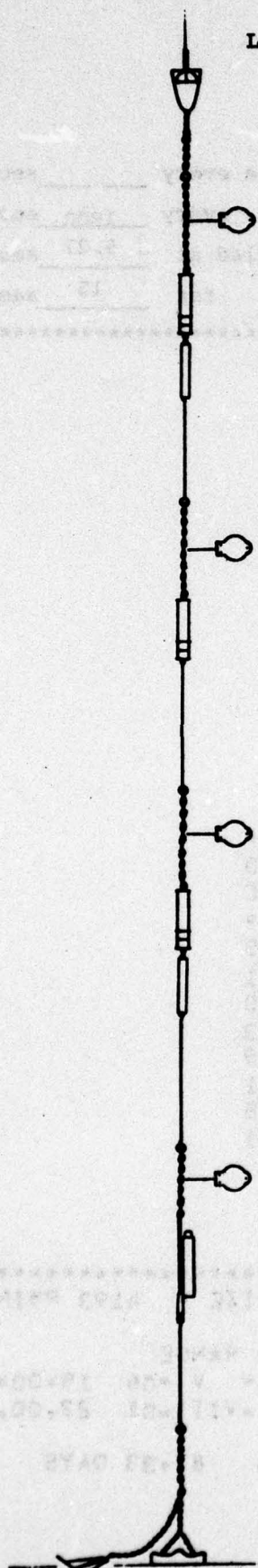
2 OF 3

AD
A045525



MOORING NO. 382

Lat. 35° 58.96'N Long. 70° 30.57'W



RADIO FLOAT
WITH LIGHT

Set May 6, 1971

1 m 1/2" CHAIN

Set by J. Gifford

10 m 3/8" CHAIN w/ 8
SPHERES IN HARD HATS

Ship R. V. Knorr Cruise 20

Recovered August 1, 1971

CURRENT METER — 3821

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 23

DEPTH RECORDER — 3822

Mooring type - Intermediate

922 m 3/8" DACRON

Purpose of mooring
Current measurement at Site J

11 m 3/8" CHAIN w/10 SPHERES
IN HARD HATS

CURRENT METER — 3823

Data No.	Instr. Type	Depth (m)
3821	Model 850	2072
3822	Depth rec.	2073
3823*	Model 850	3041
3824*	Model 850	4019
3825	Incl.	4020

914 m 3/8" DACRON

Water depth 4445

11 m 3/8" CHAIN w/ 10
SPHERES IN HARD HATS

CURRENT METER — 3824

INCLINOMETER — 3825

Comments

3821 flooded instrument

340 m 9/16" NYLON

5 m 3/8" CHAIN w/4 SPHERES
IN HARD HATS

ACOUSTIC RELEASE,
TRANSPONDING

20 m 3/4" NYLON

10 m 1/2" CHAIN

STIMSON ANCHOR, 2500 LBS

15 FT. CHAIN WITH
65 LB. DANFORTH

DATA NUMBER 3823

Instrument no. M-265

Inst. depth 3041

Float depth 2059

Water depth 4445

* Instrument sampling scheme

* VACM accumulated averages every sec

* X Model 850 data bursts every 1800 sec

* sampled at 5.27 sec

* for 15 samples

COMMENTS

DATA/ 3823E1800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

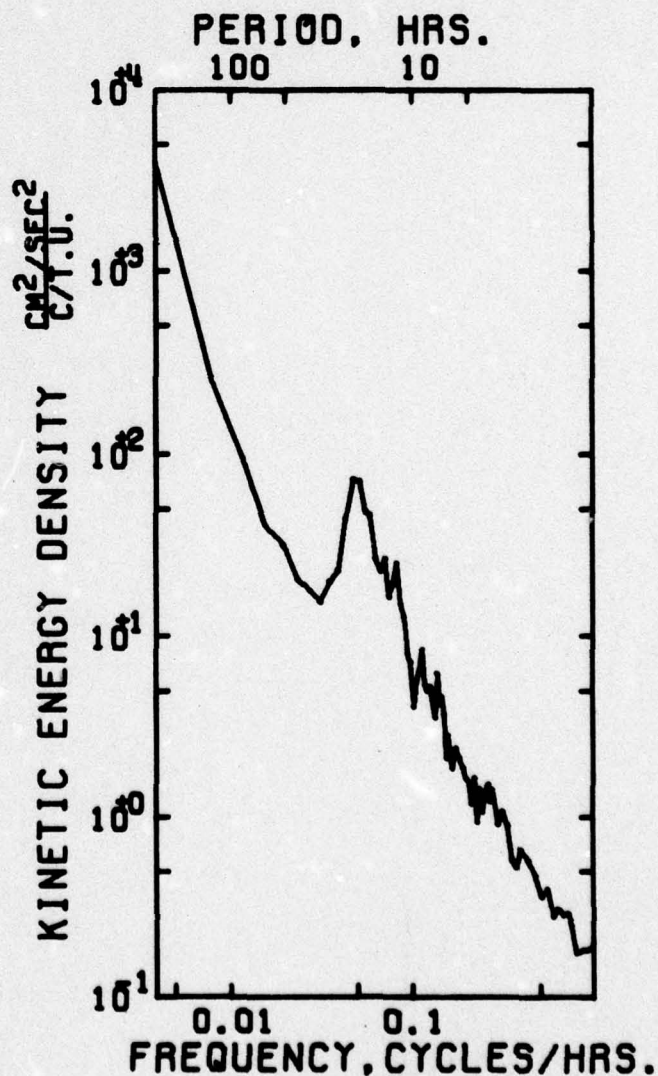
MEAN * 46.897 63.922 172.849
STD. ERR. * 1.661 2.036 1.131
VARIANCE * 11571.855 17382.582 5363.090
STD. DEV. * 107.573 131.843 73.233
KURTOSIS * 1.847 2.485 2.119
SKEWNESS * .292 .252 .151
MINIMUM * -196.995 -289.525 9.205
MAXIMUM * 236.204 320.876 332.571

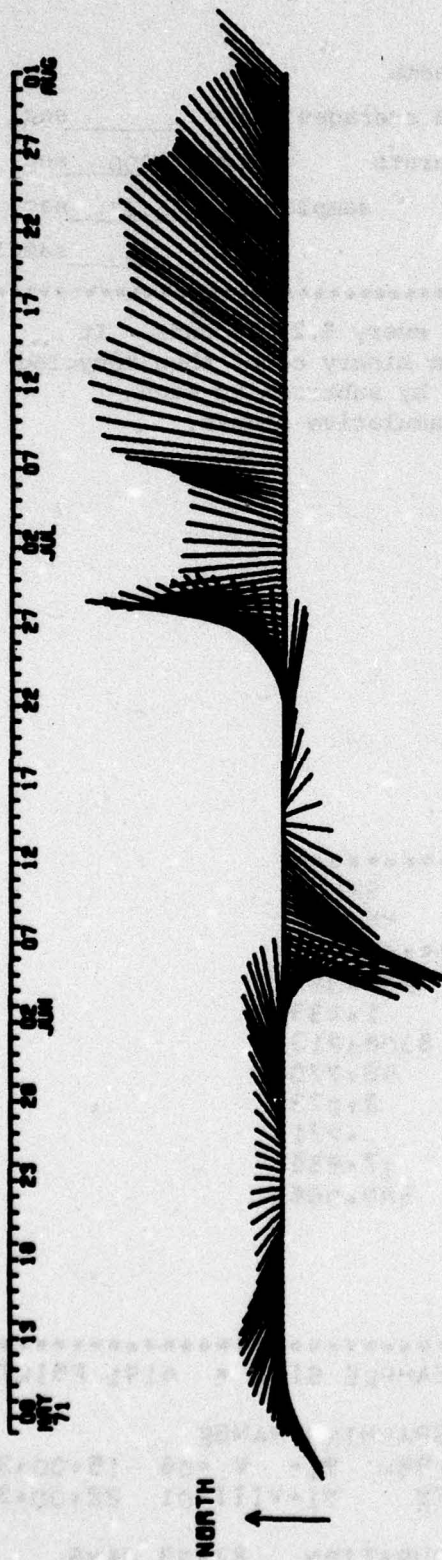
EAST & NORTH

COVARIANCE * 6797.995
STD. ERR. OF COVARIANCE * 215.503
STD. DEV. OF COVARIANCE * 13954.519
CORRELATION COEFFICIENT * .479
VECTOR MEAN * 79.280
VECTOR VARIANCE * 14477.219
VECTOR STD. DEV. * 120.321

* SAMPLE SIZE * 4193 PRINTS
*
* SPANNING RANGE
* FROM 71- V 06 15.00.36
* TO 71-VIII-01 23.00.36
*
* DURATION 87.33 DAYS

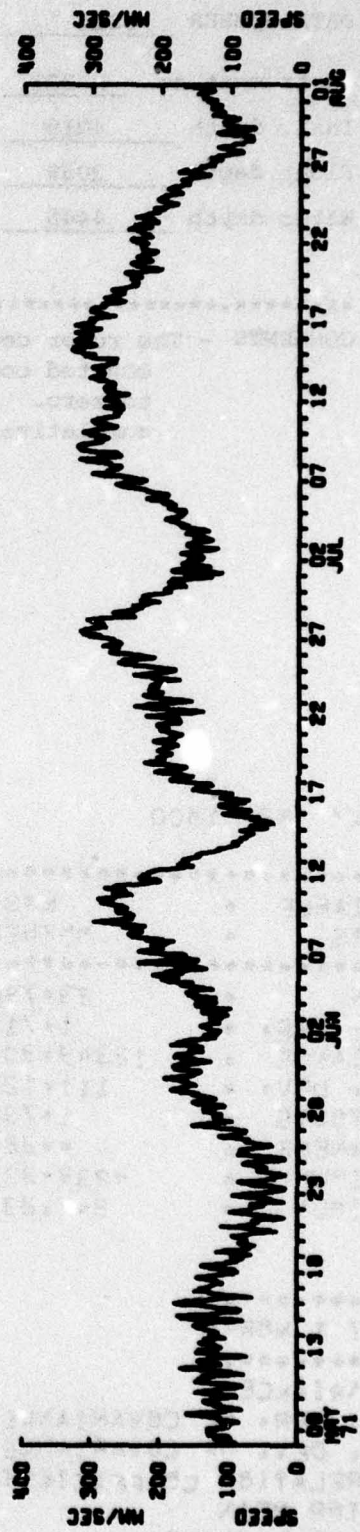
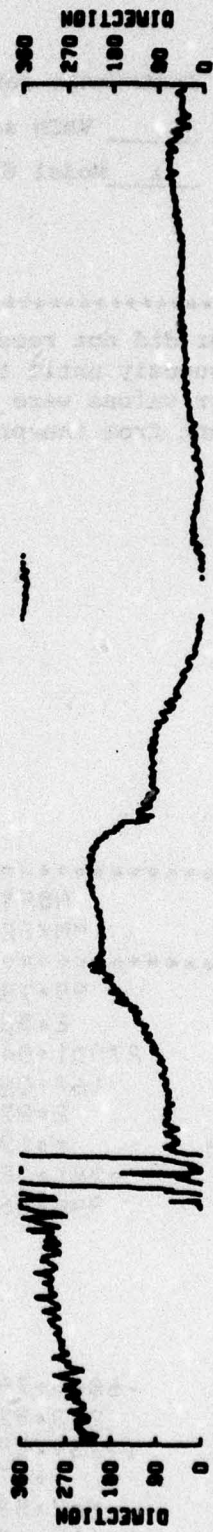
AUTO SPECTRUM
 3823E1800 EAST COMP
 3823E1800 NORTH COMP
 3041 METERS
 71-V-06 TO 71-VII-30
 1 PIECES WITH 2048 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





3823E

100 NM/SEC



DATA NUMBER 3824

Instrument no. M-271

Inst. depth 4019

Float depth 2059

Water depth 4445

* Instrument sampling scheme

***** VACM accumulated averages every _____ sec

***** X Model 850 data bursts every 1800 sec

***** sampled at 5.27 sec

***** for 15 samples

COMMENTS - The rotor counter did not reset to zero every 5.27 seconds. It counted continuously until the maximum binary count then recycled to zero. Rotor values were recovered by subtracting each cumulative count from the preceding cumulative counts.

DATA/ 3824D1800

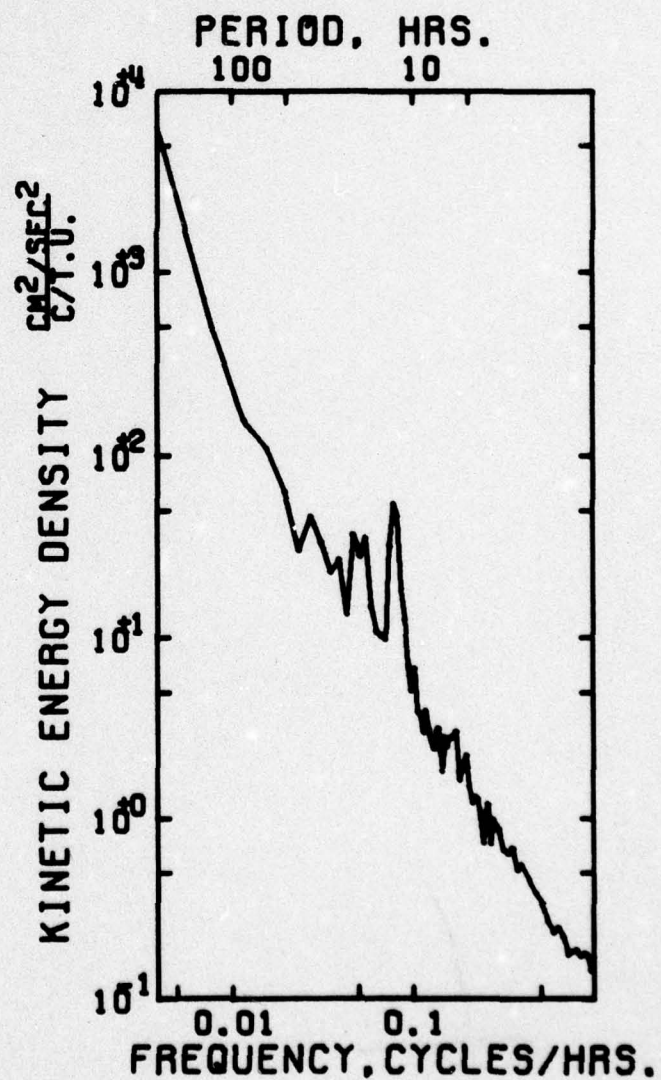
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      23.795     99.788     205.348
STD. ERR. *      1.717     2.580     1.433
VARIANCE  *    12349.308    27901.049    8606.213
STD. DEV. *      111.127    167.036     92.770
KURTOSIS  *      1.739     2.276     2.073
SKEWNESS  *      -0.382E+1    -0.190     -0.271
MINIMUM   *    -239.335    -281.083    17.985
MAXIMUM   *      247.233     399.063    399.066
*****
```

EAST & NORTH

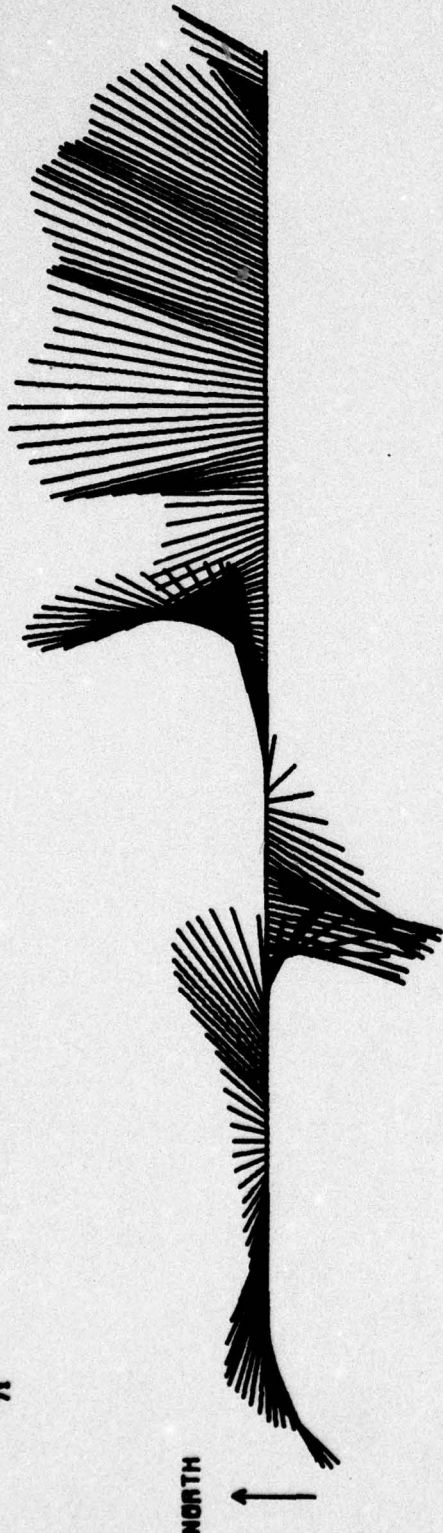
```
COVARIANCE      *    6866.783
STD. ERR. OF COVARIANCE *    273.939
STD. DEV. OF COVARIANCE *   17734.229
CORRELATION COEFFICIENT *      0.370
VECTOR MEAN      *    102.585
VECTOR VARIANCE   *   20125.178
VECTOR STD. DEV.  *    141.863
```

```
*****
* SAMPLE SIZE = 4191 POINTS
*
* SPANNING RANGE
* FROM 71- V =06 15.00.34
* TO 71-VIII-01 22.00.34
*
* DURATION 87.29 DAYS
*****
```


AUTO SPECTRUM
 382401800 EAST COMP
 382401800 NORTH COMP
 4019 METERS
 71-V-06 TO 71-VII-30
 1 PIECES WITH 2048 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

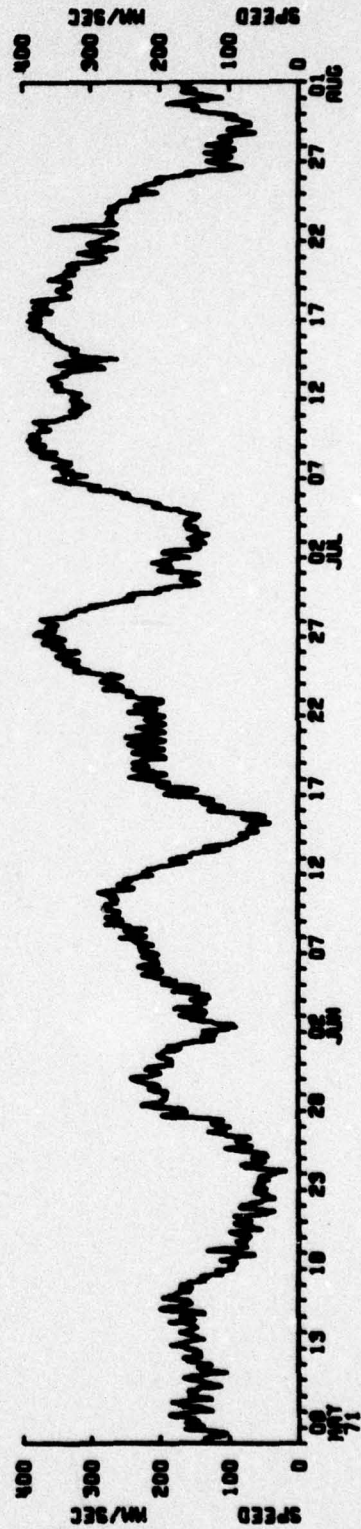
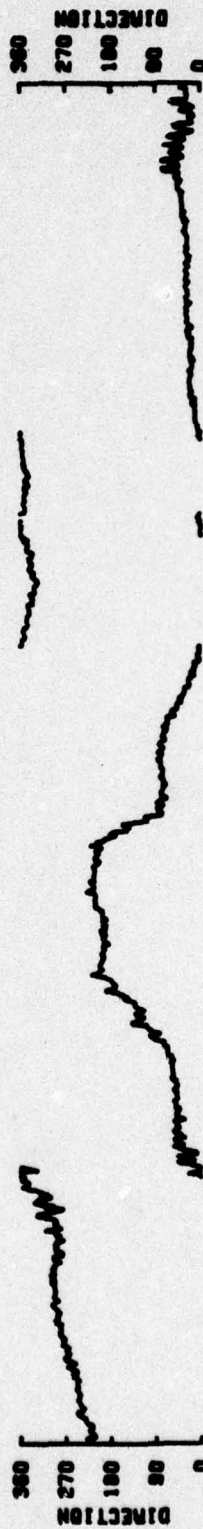


14 MAY 13 16 23 28 02 JUN 07 12 17 22 27 01 JUL 07 12 17 22 27 01 AUG



38240

100 NM/SEC



MOORING NO. 384

Lat. 32° 58.4'N Long. 136° 35.2'E

Set June 18, 1971

Set by Scharff & Armstrong

Ship + Cruise

Recovered October 4, 1971

Recovered by Gifford & Simmons

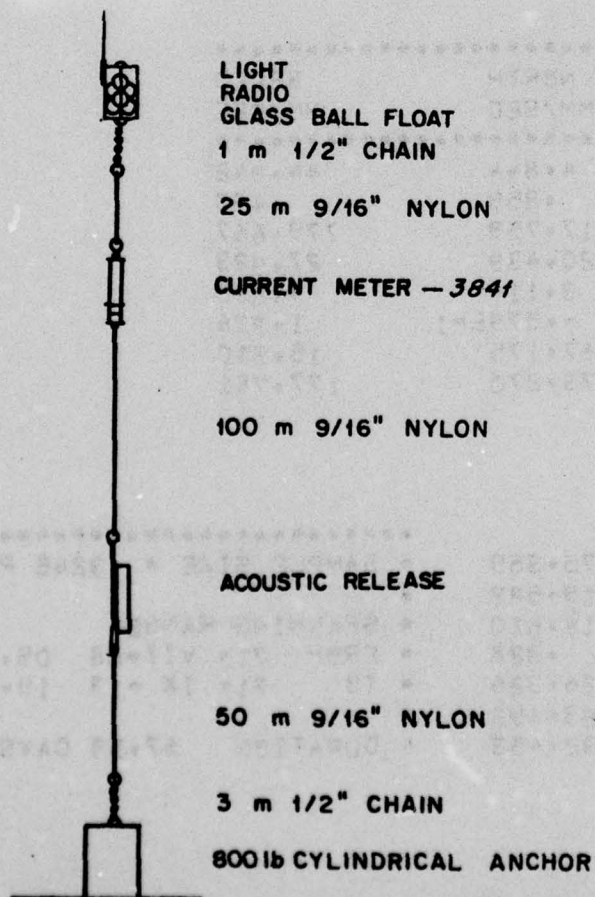
Ship ++ Cruise

Mooring type - Bottom

Purpose of mooring

Kuroshio Current study with
mooring 385

Data No.	Instr. Type	Depth (m)
3841*	Model 850	3423
Water depth		3578



Comments

† Ship Thomas Washington, Cruise Aries VI,
Scripps.

++ USCG Mallow

DATA NUMBER 3841

Instrument no. M-261 * Instrument sampling scheme
Inst. depth 3423 * VACM accumulated averages every sec
Float depth 3395 * X Model 850 data bursts every 1800 sec
Water depth 3578 * sampled at 5.27 sec
* for 15 samples

COMMENTS - The first and last 20 days of the data time series are lost due to a channel switch failure which allowed the first part of channel 'B' to overwrite the first part of channel 'A'.

DATA/ 3841A1800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

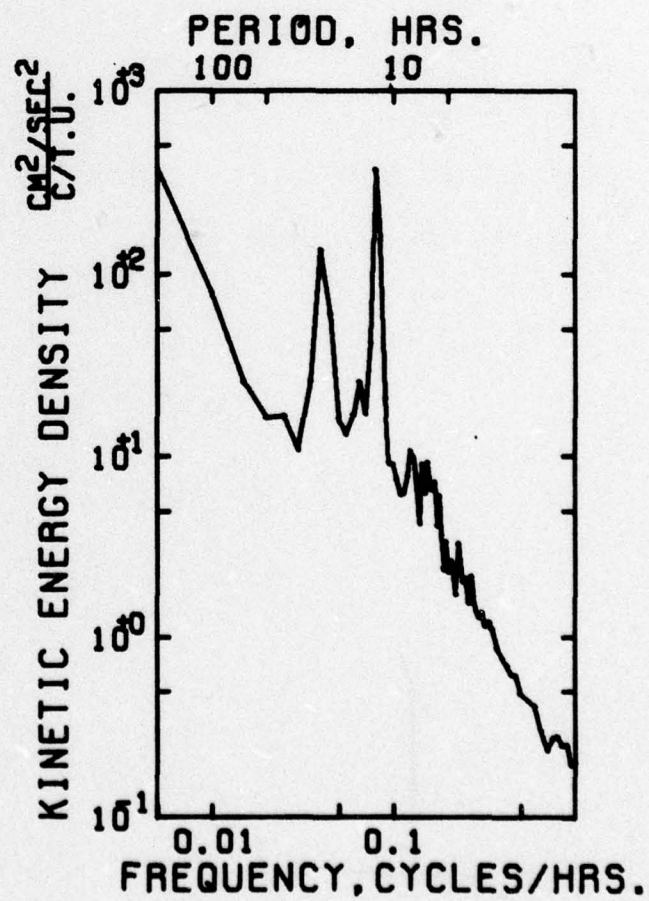
MEAN * 25.877 4.844 44.942
STD. ERR. * .721 .359 .490
VARIANCE * 1648.636 417.759 779.667
STD. DEV. * 41.093 20.439 27.923
KURTOSIS * 3.678 3.114 4.850
SKEWNESS * .757E-1 -.579E-1 1.326
MINIMUM * -127.899 -67.175 15.510
MAXIMUM * 174.607 73.270 177.781

EAST & NORTH

COVARIANCE * 275.359
STD. ERR. OF COVARIANCE * 19.582
STD. DEV. OF COVARIANCE * 1115.510
CORRELATION COEFFICIENT * .328
VECTOR MEAN * 26.326
VECTOR VARIANCE * 1053.198
VECTOR STD. DEV. * 32.453

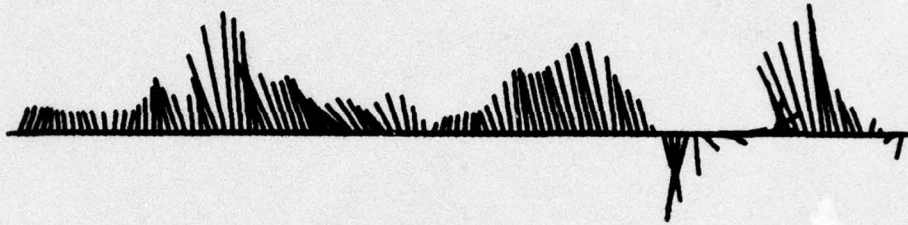
* SAMPLE SIZE = 3245 POINTS
*
* SPANNING RANGE
* FROM 71- VII-08 05.45.37
* TO 71- IX -13 19.45.37
*
* DURATION 67.53 DAYS

AUTO SPECTRUM
 3841A1800 EAST COMP
 3841A1800 NORTH COMP
 3423 METERS
 71-VII-08 TO 71-IX-13
 1 PIECES WITH 1620 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



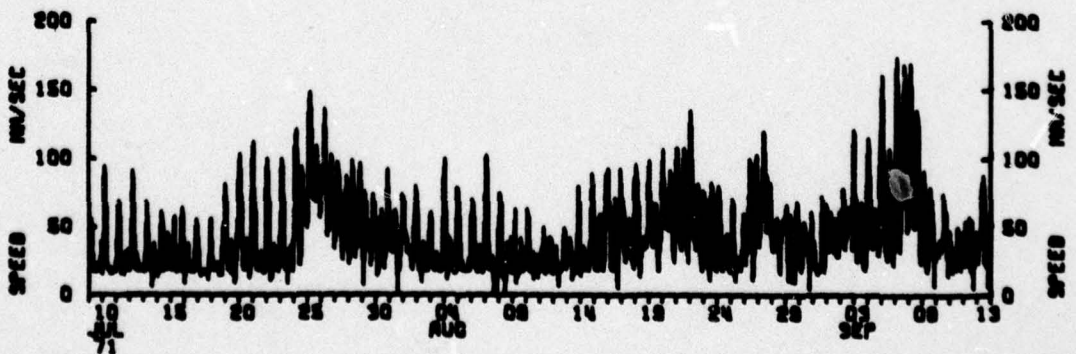
10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100

EAST



50 MM/SEC

3841A



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MOORING NO. 385

Lat. 32° 46.9'N Long. 134° 41.0'E

Set June 19, 1971

Set by Scharf & Armstrong

Ship T. Washington* Cruise Leg 6 Aries

Recovered October 3, 1971

Recovered by Gifford & Simmons

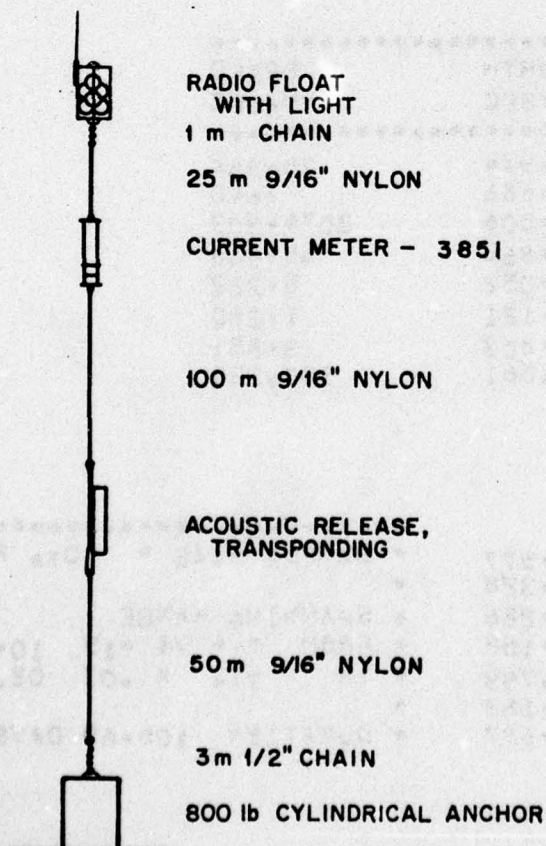
Ship USCGC Mallow Cruise

Mooring type - Bottom

Purpose of mooring

Kuroshio Current study with
mooring 384

<u>Data</u> <u>No.</u>	<u>Instr.</u> <u>Type</u>	<u>Depth</u> <u>(m)</u>
3851*	Model 850	1059
Water depth		1211



Comments

Ship * T. Washington, Scripps

DATA NUMBER 3851

Instrument no. M-273

Inst. depth 1059

Float depth 1031

Water depth 1211

* Instrument sampling scheme

* VACM accumulated averages every sec

* X Model 850 data bursts every 1800 sec

* sampled at 5.27 sec

* for 15 samples

COMMENTS

DATA/ 385101800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -19.404    -9.934    75.942
STD. ERR. *          .991     .686     .640
VARIANCE  *    4980.821    2387.506    2076.303
STD. DEV. *    70.575     48.862    45.566
KURTOSIS  *     3.649     3.052     5.222
SKEWNESS  *     -0.165     -0.121     1.260
MINIMUM   *    -297.443    -174.803     3.881
MAXIMUM   *     255.351     209.561    330.333
```

EAST & NORTH

```
COVARIANCE      *      543.577
STD. ERR. OF COVARIANCE *      60.328
STD. DEV. OF COVARIANCE *    4297.286
CORRELATION COEFFICIENT *          .158
VECTOR MEAN      *      21.799
VECTOR VARIANCE   *    3684.163
VECTOR STD. DEV.  *      60.697
```

* SAMPLE SIZE * 5074 POINTS

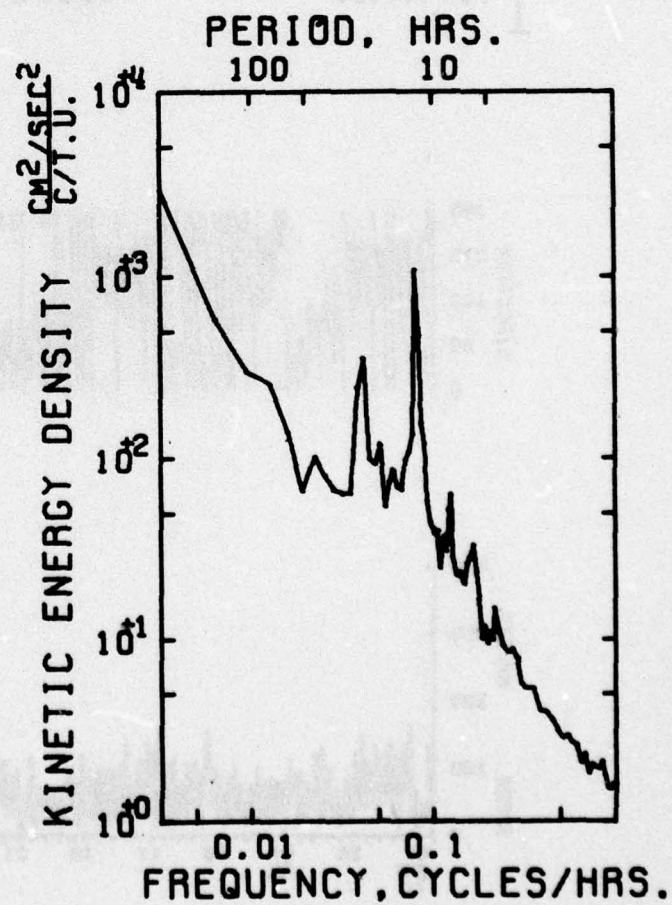
* SPANNING RANGE

* FROM 71- VI -19 10:00.37

* TO 71- X -03 02:30.37

* DURATION 105.69 DAYS

AUTO SPECTRUM
 385101800 EAST COMP
 385101800 NORTH COMP
 1059 METERS
 71-VI-19 TO 71-X-01
 1 PIECES WITH 2500 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



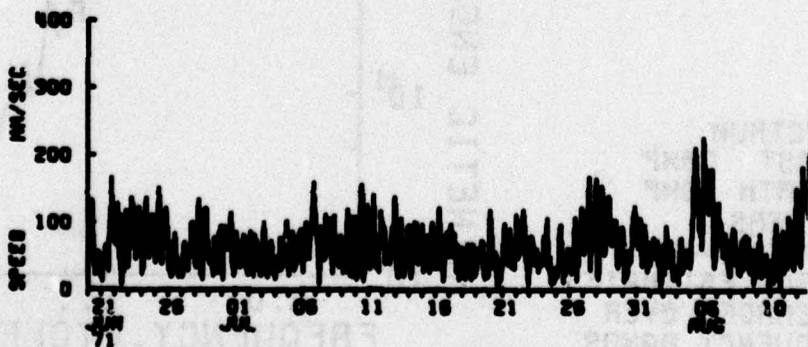


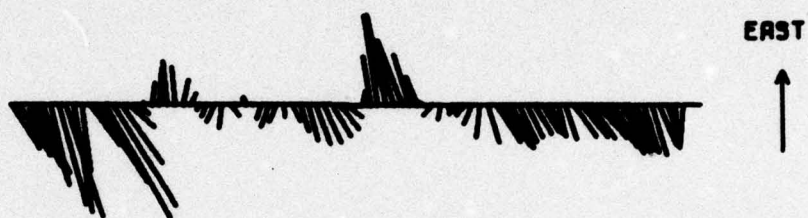
EAST



100 MM/SEC

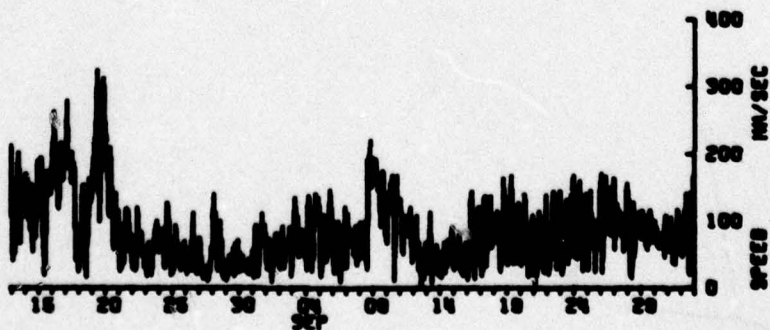
38510





38510

100 MM/SEC



Gulf Stream Array

<u>Mooring No.</u>	<u>Latitude</u>	<u>Longitude</u>
388	37° 45.0'N	64° 28.8'W
389	37° 57.0'N	64° 40.5'W
390	38° 10.0'N	64° 49.0'W
391	38° 23.7'N	65° 00.0'W
392	38° 35.0'N	65° 10.0'W
393	38° 48.0'N	65° 21.9'W
394	39° 00.0'N	65° 31.2'W

Set June 29, 1971

Set by D. Moller

Ship R. V. Knorr Cruise 22

Recovered July 31, 1971

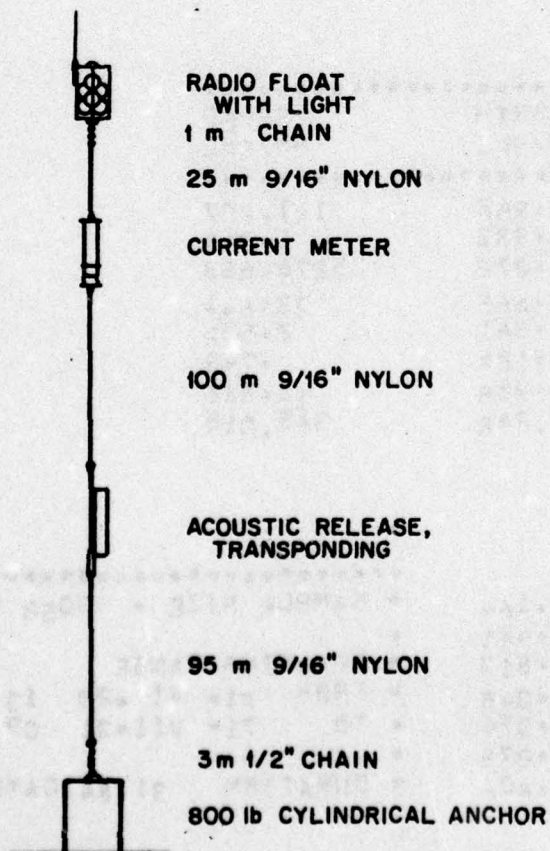
Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 23

Mooring type - Bottom

Purpose of mooring

Measurement of Gulf Stream transport



<u>Data No.</u>	<u>Depth (m)</u>	<u>Water Depth</u>
3881*	4805	5005
3891*	4796	4996
3901*	4800	5000
3911*	4731	4931
3921*	4670	4870
3931*	4610	4810
3941*	4580	4780

Comments The mooring diagram shown here is representative of moorings 388, 389, 390, 391, 392, 393, and 394 with the following exceptions:
 (1) on mooring 388 the float was a rectangular syntactic foam float,
 (2) on mooring 389 the float was a round syntactic foam float with a short mast.

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Data Name	Instr. No.	Model 850 Recording	Data Sampling Sampled at	# Samples	Float Depth (m)	Instr. Depth (m)	Water Depth (m)
3881	M-122	900 s	5.27	24	4775	4805	5005
3891	M-191	900	5.27	24	4766	4796	4996
3901	M-203	900	5.27	24	4770	4800	5000
3911	M-205	900	5.27	24	4701	4731	4931
3921	M-272	900	5.27	23	4640	4670	4870
3931	M-276	900	5.27	23	4580	4610	4810
3941	M-277	900	5.27	23	4550	4580	4780

COMMENTS - All good data.

DATA/ 3881E900

VARIABLE	EAST	NORTH	SPFED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	67.504	-66.952	141.807
STD. ERR.	1.189	1.983	1.314
VARIANCE	4320.177	12026.372	5276.663
STD. DEV.	65.728	109.665	72.641
KURTOSIS	2.654	2.341	2.556
SKEWNESS	.620	-.126	.743
MINIMUM	-90.963	-344.983	17.846
MAXIMUM	242.275	145.248	345.015

EAST & NORTH

COVARIANCE	-2489.164
STD. ERR. OF COVARIANCE	186.491
STD. DEV. OF COVARIANCE	10312.813
CORRELATION COEFFICIENT	-.345
VECTOR MEAN	95.076
VECTOR VARIANCE	8173.274
VECTOR STD. DEV.	90.406

SAMPLE SIZE	3058 POINTS
SPANNING RANGE	
FROM	VI .29 13.15.58
TO	VII.31 09.30.58
DURATION	31.84 DAYS

DATA/ 3891K900

```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      *          35.512         -54.903         114.151
STD. ERR. *          1.452          1.601          1.336
VARIANCE  *        6392.410         7777.750         5415.119
STD. DEV. *          79.953          88.192          73.587
KURTOSIS  *          3.421          2.080          3.640
SKEWNESS  *          .864           .177E-2          .971
MINIMUM   *        -129.746         -260.550         17.688
MAXIMUM   *          302.640          130.423         371.281
```

EAST & NORTH

```
COVARIANCE      *      -4300.302
STD. ERR. OF COVARIANCE *      210.954
STD. DEV. OF COVARIANCE *     11619.719
CORRELATION COEFFICIENT *          .610
VECTOR MEAN      *      65.387
VECTOR VARIANCE   *      7085.080
VECTOR STD. DEV.  *      84.173
```

```
*****
* SAMPLE SIZE * 3034 POINTS
* SPANNING RANGE
* FROM 71- VI -29 16.15.58
* TO 71- VII-31 06.30.58
* DURATION 31.59 DAYS
```

DATA/ 3901J900

```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      *          27.586         -55.941         126.862
STD. ERR. *          1.810          1.462          1.164
VARIANCE  *        9450.838         6423.003         4070.409
STD. DEV. *          99.251          80.144          63.800
KURTOSIS  *          2.485          3.571          3.386
SKEWNESS  *          .504           .129           .600
MINIMUM   *        -141.329         -279.046         17.371
MAXIMUM   *          321.818          188.854         322.235
```

EAST & NORTH

```
COVARIANCE      *      -25.093
STD. ERR. OF COVARIANCE *      172.239
STD. DEV. OF COVARIANCE *     9443.349
CORRELATION COEFFICIENT *      -.315E-2
VECTOR MEAN      *      62.373
VECTOR VARIANCE   *      8136.921
VECTOR STD. DEV.  *      90.205
```

```
*****
* SAMPLE SIZE * 3006 POINTS
* SPANNING RANGE
* FROM 71- VI -29 18.15.58
* TO 71- VII-31 01.30.58
* DURATION 31.30 DAYS
```


DATA/ 3911K900

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      -10.203      -68.470      131.511
STD. ERR. =        2.037        1.646        1.630
VARIANCE  =    12352.911    8060.053    7909.974
STD. DEV. =      111.144      89.778      88.938
KURTOSIS  =        3.717        3.287        3.584
SKEWNESS  =        .635        .589        .866
MINIMUM   =    -395.974    -422.186      14.223
MAXIMUM   =      254.642      123.830     458.094
```

EAST & NORTH

```
COVARIANCE      =    1554.242
STD. ERR. OF COVARIANCE =    279.488
STD. DEV. OF COVARIANCE =   15246.832
CORRELATION COEFFICIENT =        .156
VECTOR MEAN      =        69.226
VECTOR VARIANCE   =   10206.482
VECTOR STD. DEV.  =    101.027
```

```
*****
* SAMPLE SIZE = 2976 POINTS
*
* SPANNING RANGE
* FROM 71- VI -29 21.00.58
* TO 71- VII-30 20.45.58
*
* DURATION 30.99 DAYS
```

DATA/ 3921B900

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      -53.201      -90.912     159.950
STD. ERR. =        2.173        1.537        1.475
VARIANCE  =   13938.585    6970.592    6420.386
STD. DEV. =      118.062      83.490      80.127
KURTOSIS  =        2.397        3.036        3.368
SKEWNESS  =       -0.443        .305        .766
MINIMUM   =   -357.136    -360.917     17.285
MAXIMUM   =      162.222      141.623     434.417
```

EAST & NORTH

```
COVARIANCE      =    1259.927
STD. ERR. OF COVARIANCE =    317.248
STD. DEV. OF COVARIANCE =   17236.793
CORRELATION COEFFICIENT =        .128
VECTOR MEAN      =       105.334
VECTOR VARIANCE   =   10454.589
VECTOR STD. DEV.  =    102.248
```

```
*****
* SAMPLE SIZE = 2952 POINTS
*
* SPANNING RANGE
* FROM 71- VI -30 01.00.57
* TO 71- VII-30 17.45.57
*
* DURATION 30.74 DAYS
```

DATA/ 3931C900

```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      *          .930          -77.111        140.969
STD. ERR. *          1.881          1.941          1.594
VARIANCE  *        10343.877        11015.723        7434.356
STD. DEV. *          101.705        104.956        86.223
KURTOSIS  *          3.301          3.157          3.110
SKEWNESS  *          -.653          -.671          .711
MINIMUM   *        -336.352        -419.337        17.366
MAXIMUM   *          212.201        121.592        434.295
```

EAST & NORTH

```
COVARIANCE *          -4402.904
STD. ERR. OF COVARIANCE *          214.312
STD. DEV. OF COVARIANCE *        11590.696
CORRELATION COEFFICIENT *          -.412
VECTOR MEAN *          77.116
VECTOR VARIANCE *        10679.800
VECTOR STD. DEV. *          103.343
```

```
*****
* SAMPLE SIZE = 2925 POINTS
*
* SPANNING RANGE
* FROM 71- VI -30 03.15.57
* TO 71- VII-30 14.15.57
*
* DURATION 30.46 DAYS
```

DATA/ 3941B900

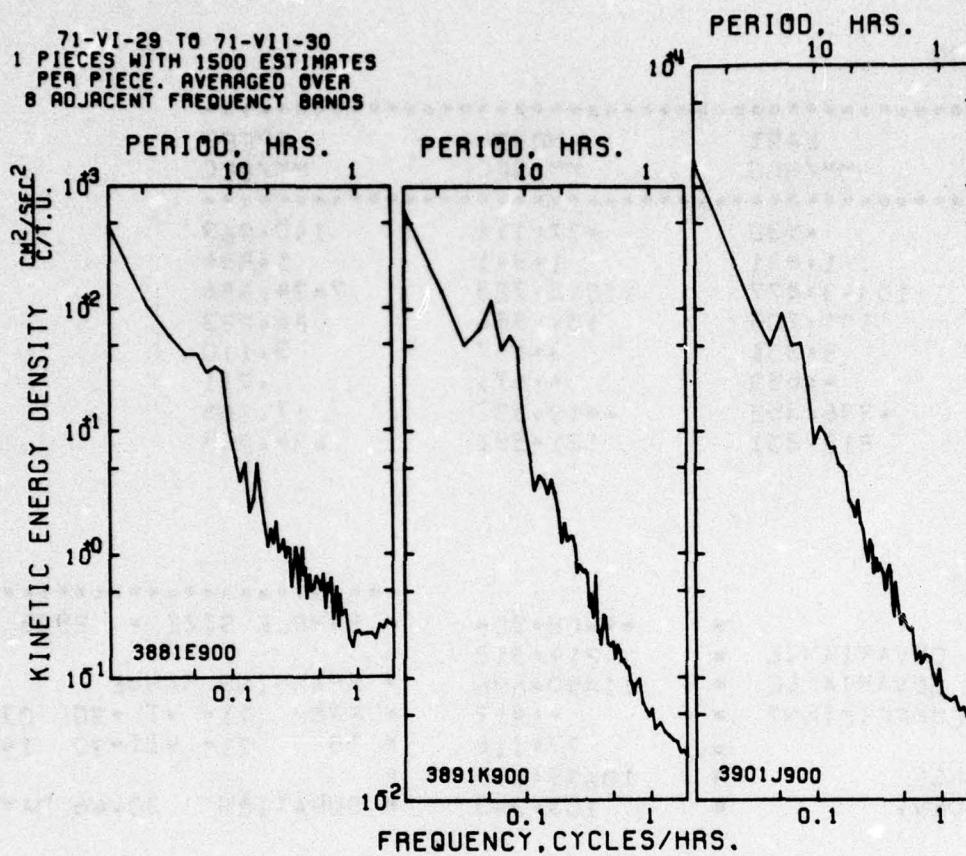
```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      *        -79.104          -93.293        180.694
STD. ERR. *          2.385          1.869          1.757
VARIANCE  *        16507.452        10133.712        8951.793
STD. DEV. *          128.481        100.666        94.614
KURTOSIS  *          1.734          3.109          2.621
SKEWNESS  *        -.987E-1          -.751          .296
MINIMUM   *        -365.714        -419.878        17.642
MAXIMUM   *          181.007         72.164        430.097
```

EAST & NORTH

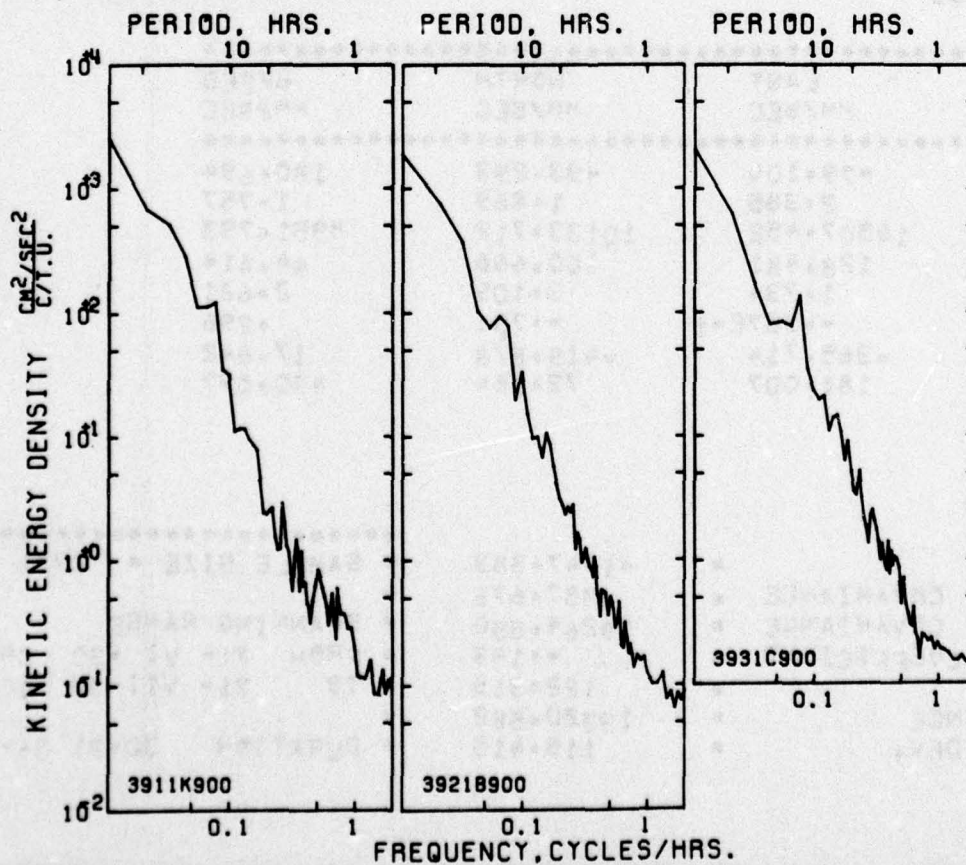
```
COVARIANCE *          -1847.883
STD. ERR. OF COVARIANCE *          357.672
STD. DEV. OF COVARIANCE *        19264.550
CORRELATION COEFFICIENT *          -.143
VECTOR MEAN *          122.315
VECTOR VARIANCE *        13320.582
VECTOR STD. DEV. *          115.415
```

```
*****
* SAMPLE SIZE = 2931 POINTS
*
* SPANNING RANGE
* FROM 71- VI -30 05.30.57
* TO 71- VII-30 10.30.57
*
* DURATION 30.21 DAYS
```

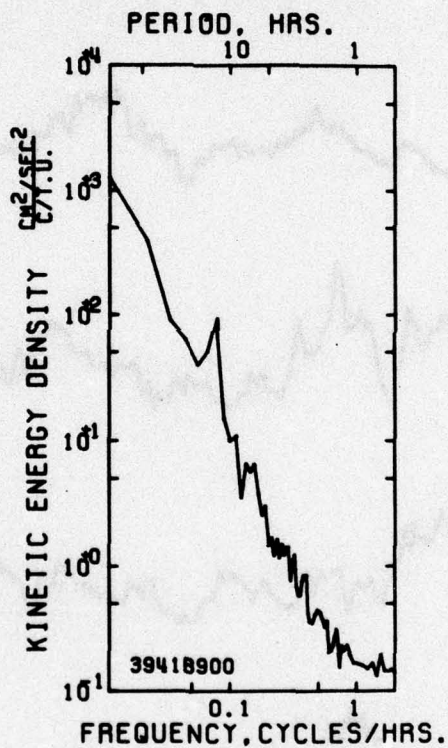

71-VI-29 TO 71-VII-30
1 PIECES WITH 1500 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS

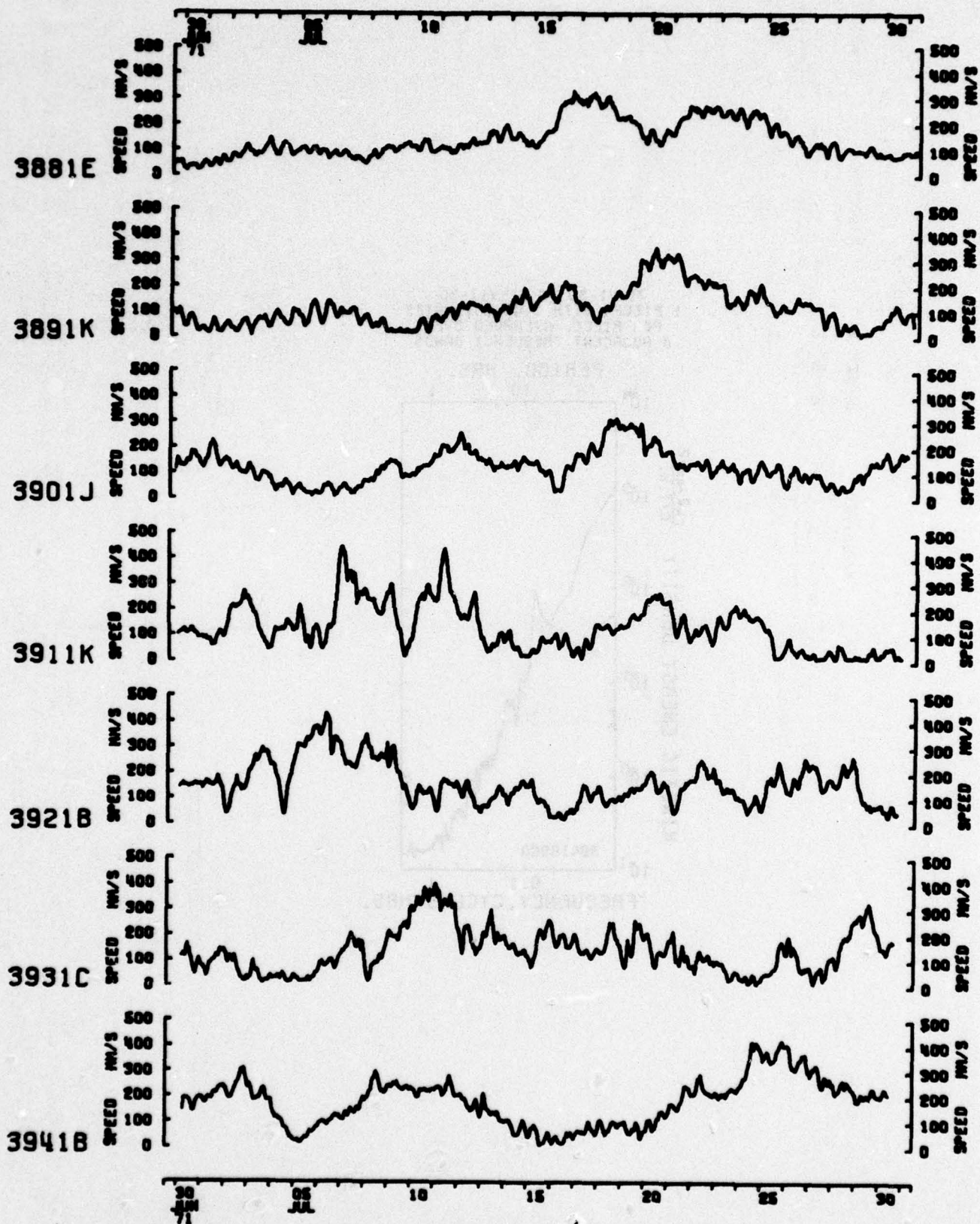


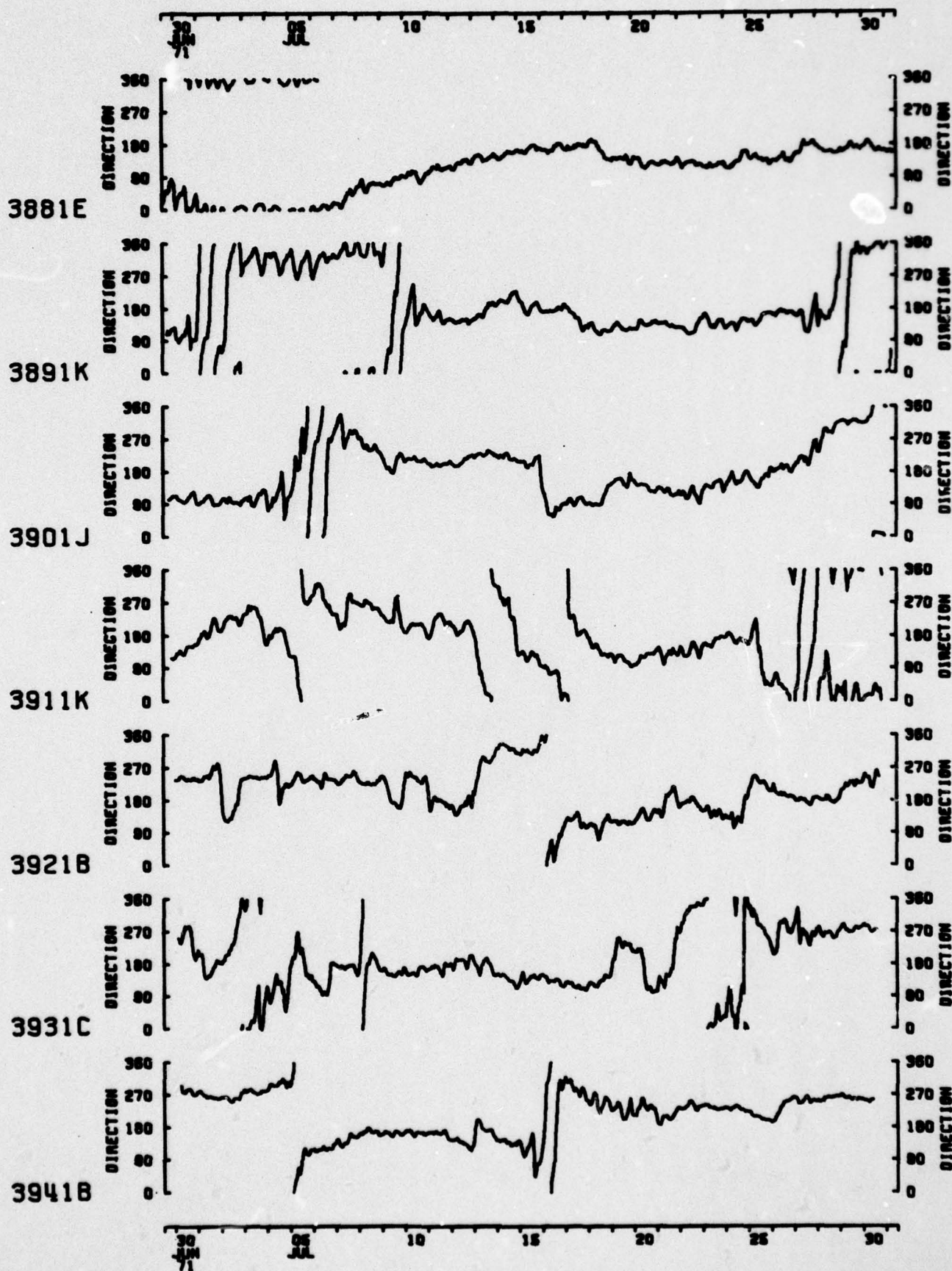
71-VI-30 TO 71-VII-30
1 PIECES WITH 1458 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



71-VI-30 TO 71-VII-30
1 PIECES WITH 1440 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



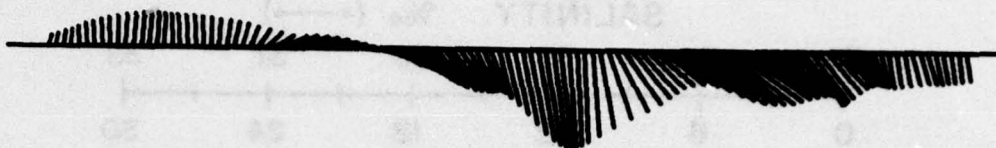




30 25 20 15 10 05 00
71

I 100 MM/SEC

3881E



3891K



3901J



3911K



3921B



3931C



3941B



NORTH



30 25 20 15 10 05 00
71

MOORING NO. 395

Lat. 39° 31.6'N Long. 69° 59.1'W

Set July 27, 1971

Set by R. Heinmiller

Ship R. V. Knorr Cruise 23

Recovered September 10, 1971

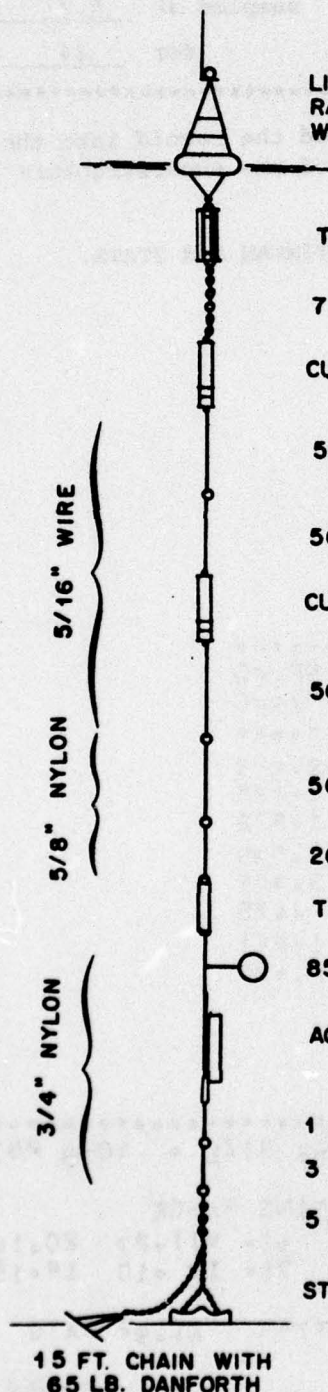
Recovered by D. Moller

Ship Delaware II † Cruise 71-3

Mooring type - Surface

Purpose of mooring

- A) Current measurements at Site D
- B) Thermograph array for P. Saunders, moorings 396, 397, 398



LIGHT
RADIO
WIND RECORDER - 3951

THERMOGRAPH - 3952

7 m CHAIN

CURRENT METER - 3953

500 m

500 m

CURRENT METER - 3954

500 m

500 m

200 m

TENSIO METER - 3955

85 m w/ 30 SPHERES
in NETS

ACOUSTIC RELEASE

1 m

3 m

5 m CHAIN

STIMSON ANCHOR, 4000 LBS

Data No.	Instr. Type	Depth (m)
3951*	Wind	-2
3952	Temp	3
3953	Model 850	12
3954*	Model 850	1014
3955	Tens.	2318
	Water depth	2428

Comments

Aug 7 On station (Knorr)
 Aug 21 On station (Cap'n Bill IV)
 Aug 25 On station (Aztec Flight)
 heavy current to north
 Sept 3 39° 33'N, 69° 56'W (Aztec)
 Sept 10 Recovered 39° 33.5'N,
 69° 55.5'W. Surface current
 1.5-2.0 knots.
 Direction 070 true

3953 Electronic problems

† Ship Delaware II, NOAA

DATA NUMBER 3951

Instrument no. W-101X

Inst. depth -2

Float depth -0-

Water depth 2428

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 24 samples

COMMENTS - There was a fin on the toroid which directed the toroid into the wind in such a way that the tripod legs of the superstructure did not interfere with wind flow.

One hour vector averaged version used for TIMSAN and STATS.

DATA/ 3951WE1HA

VARIABLE * EAST NORTH SPEED
UNITS * DM/SEC DM/SEC DM/SEC

MEAN = 25.632 18.906 88.529
STD. ERR. = 1.908 1.976 1.128
VARIANCE = 3929.515 4213.081 1371.872
STD. DEV. = 62.686 64.908 37.039
KURTOSIS = 2.368 3.154 3.229
SKEWNESS = -.319 -.461 .475
MINIMUM = -162.456 -214.758 1.541
MAXIMUM = 161.396 186.486 216.477

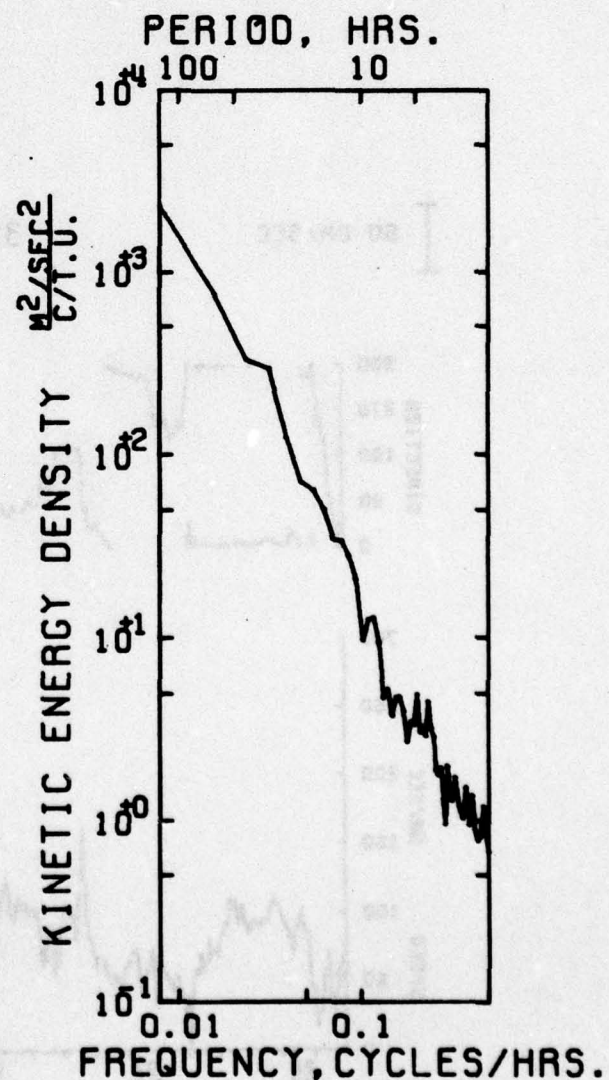
EAST & NORTH

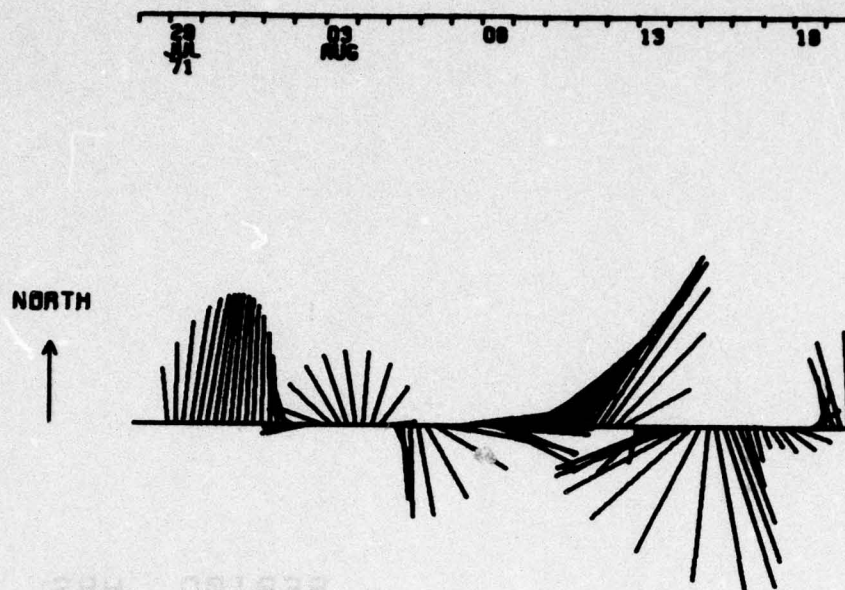
COVARIANCE = 1136.733
STD. ERR. OF COVARIANCE = 125.840
STD. DEV. OF COVARIANCE = 4133.620
CORRELATION COEFFICIENT = .279
VECTOR MEAN = 32.660
VECTOR VARIANCE = 4071.298
VECTOR STD. DEV. = 63.807

* SAMPLE SIZE = 1079 POINTS
*
* SPANNING RANGE
* FROM 71- VII-27 20.15.57
* TO 71- IX-10 18.15.57
*
* DURATION 44.92 DAYS

BEST AVAILABLE COPY

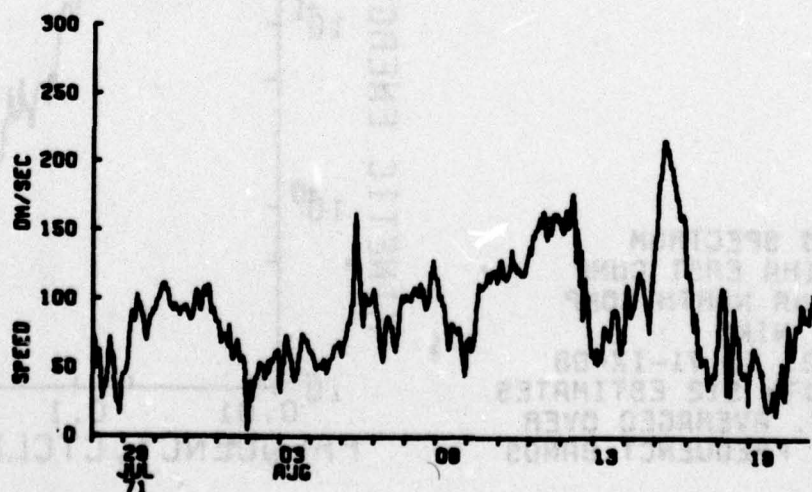
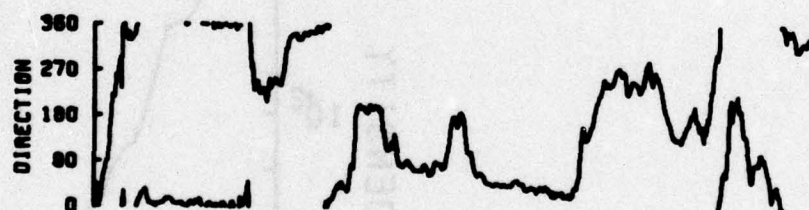
AUTO SPECTRUM
 3951WE1HA EAST COMP
 3951WE1HA NORTH COMP
 WIND
 71-VII-27 TO 71-IX-08
 1 PIECES WITH 512 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

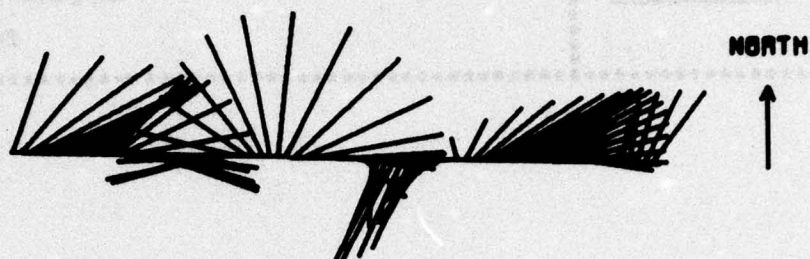
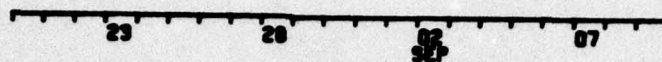




50 CM/SEC

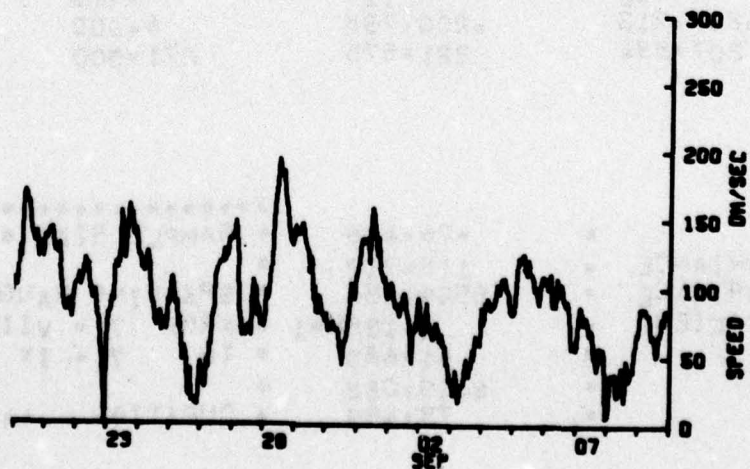
3951WE





3951WE

50 DM/SEC



DATA NUMBER 3954

Instrument no. M-204

Inst. depth 1014

Float depth -0-

Water depth 2428

*** Instrument sampling scheme

*** VACM accumulated averages every _____ sec

*** X Model 850 data bursts every 1800 sec

*** sampled at 5.27 sec

*** for 24 samples

COMMENTS

DATA/ 3954H1800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC      MM/SEC
*****
MEAN      *      -35.702    21.513    112.155
STD. ERR. *      1.907     1.494     .913
VARIANCE  *      7831.897   4806.279   1796.853
STD. DEV. *      88.498    69.327    42.389
KURTOSIS  *      2.698     2.732     2.754
SKEWNESS  *      .460      .119      .413
MINIMUM   *      -237.713   -200.798   6.000
MAXIMUM   *      207.994    221.575   271.000
```

EAST & NORTH

```
COVARIANCE      *      -76.426
STD. ERR. OF COVARIANCE *      118.712
STD. DEV. OF COVARIANCE *      5509.556
CORRELATION COEFFICIENT *      -.125E-1
VECTOR MEAN      *      41.683
VECTOR VARIANCE   *      6319.088
VECTOR STD. DEV.  *      79.493
```

* SAMPLE SIZE * 2154 PRINTS

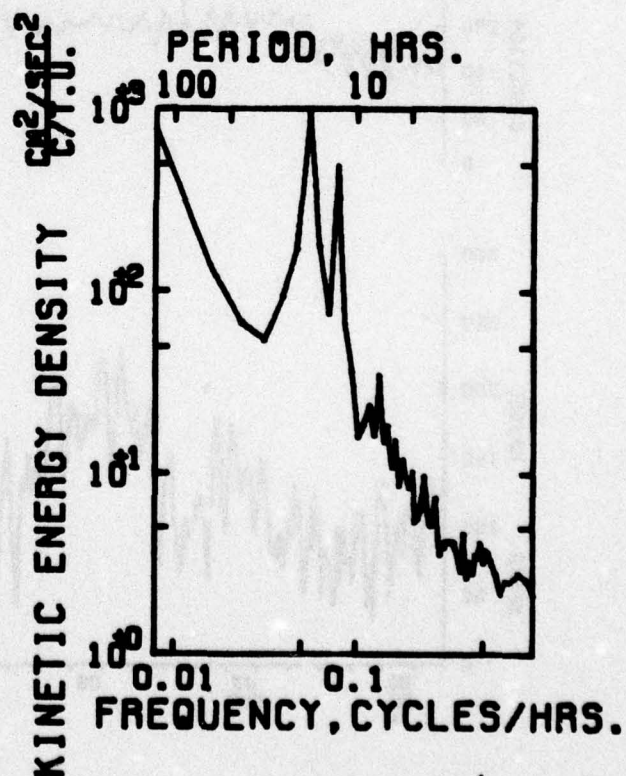
* SPANNING RANGE

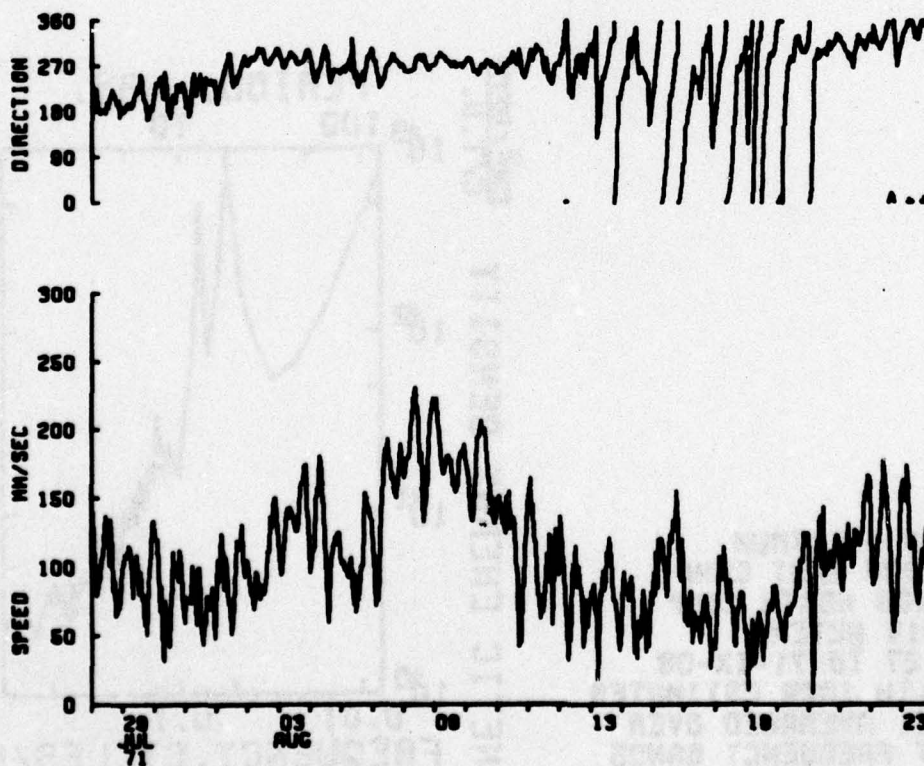
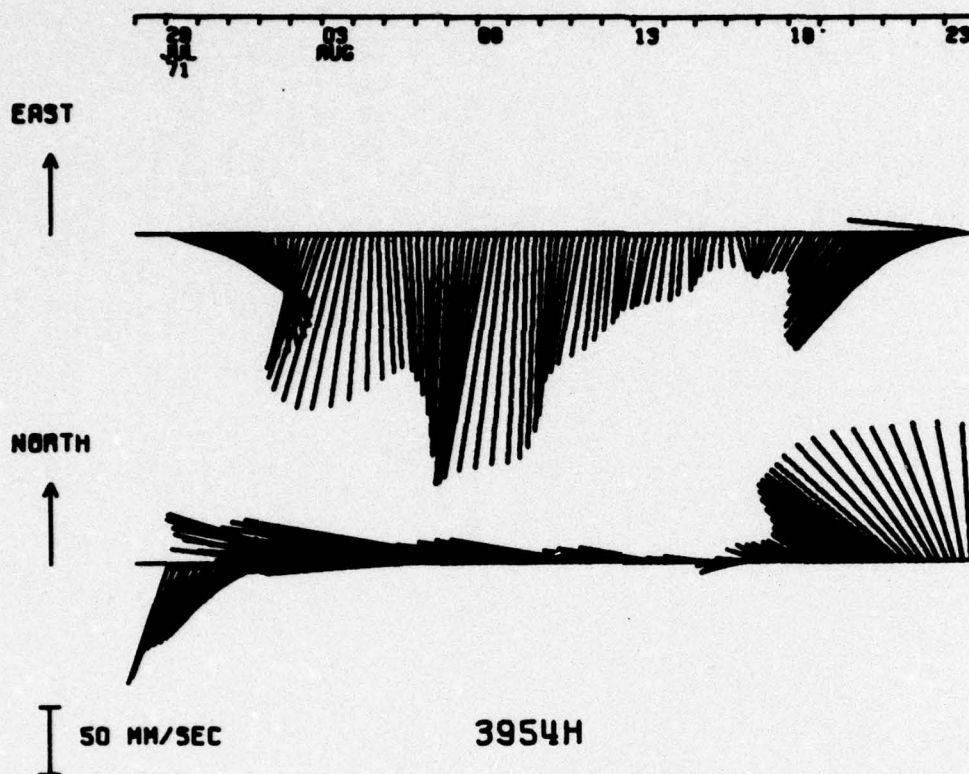
* FROM 71- VII-27 19:00:58

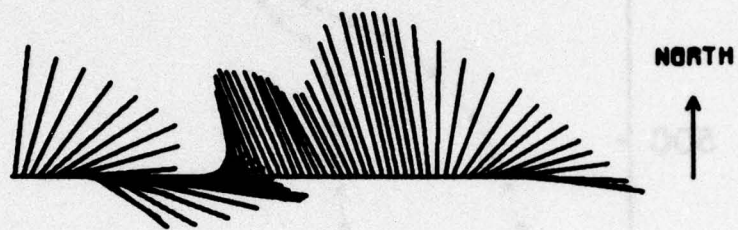
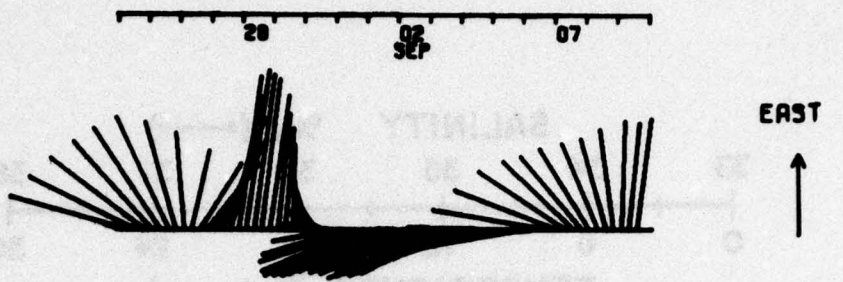
* TO 71- IX -10 15:30:58

* DURATION 44.85 DAYS

AUTO SPECTRUM
 3954H1800 EAST COMP
 3954H1800 NORTH COMP
 1014 METERS
 71-VII-27 TO 71-IX-08
 1 PIECES WITH 1024 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

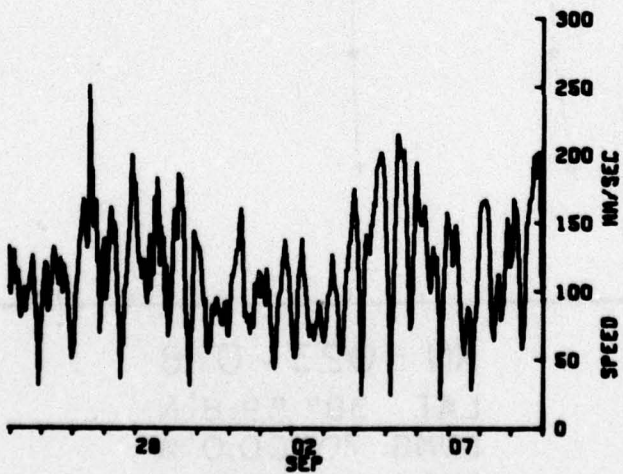
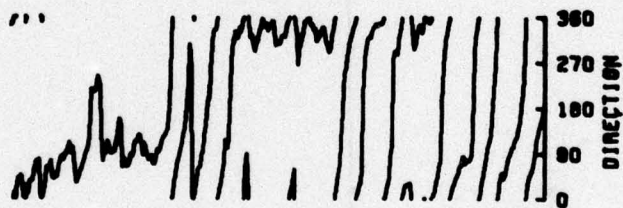


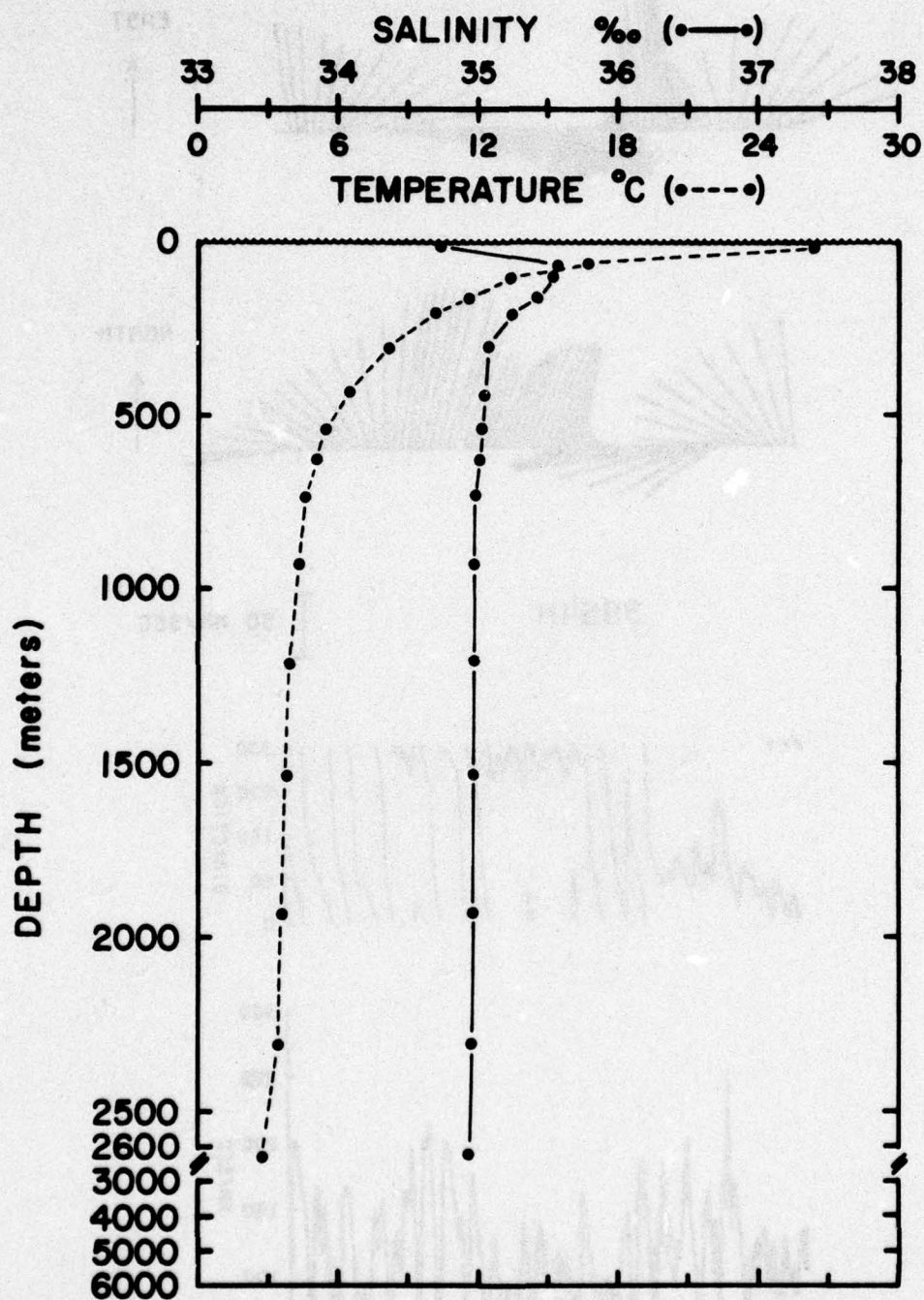




3954H

50 MM/SEC





KN - 023 - 078

LAT. 38° 59.8' N

LONG. 70° 00.0' W

DATE 71-08-7

MOORING NO. 396

Lat. 39° 08.8'N Long. 70° 07.4'W

Set July 27, 1971

Set by R. Heinmiller

Ship R. V. Knorr Cruise 23

Recovered September 11, 1971

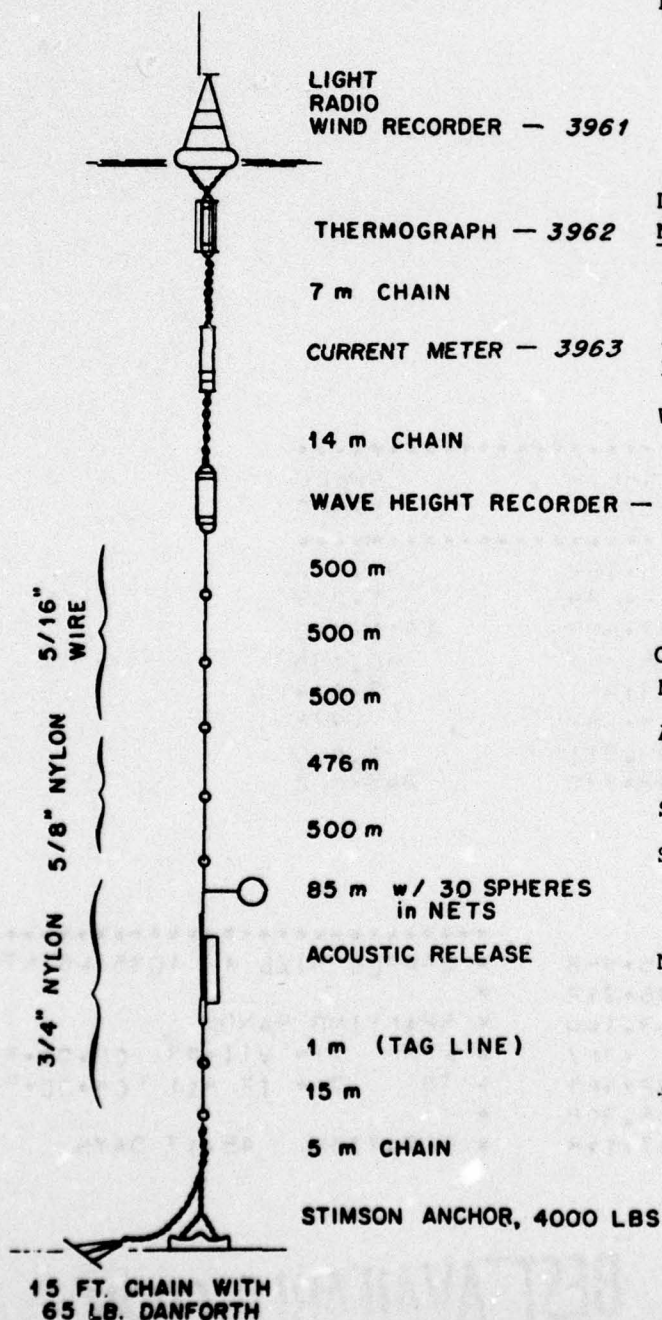
Recovered by D. Moller

Ship Delaware II† Cruise 71-3

Mooring type - Surface

Purpose of mooring

- A) Current measurements at Site D
- B) Thermograph array for P. Saunders, moorings 395, 397 and 398



THERMOGRAPH - 3962

7 m CHAIN

CURRENT METER - 3963

14 m CHAIN

WAVE HEIGHT RECORDER - 3964

500 m

500 m

500 m

476 m

500 m

85 m w/ 30 SPHERES
in NETS

ACOUSTIC RELEASE

1 m (TAG LINE)

15 m

5 m CHAIN

STIMSON ANCHOR, 4000 LBS

Data No.	Instr. Type	Depth (m)
3961*	Wind	-2
3962	Temp	3
3963*	Model 850	12
3964	Wave recorder	27
Water depth		2738

Comments

Mooring was recovered in two pieces:

Aug 25 On station (Aztec Flight)
strong current

Sept 3 Not sighted (Aztec Flight)

Sept 11 Recovered upper part of
mooring (~ 500 m) 45 miles
from station

Nov 6 Recovered rest of mooring with
back-up recovery system
(Berteaux, Heinmiller
W.H.O.I. Ref. 69-7)

† Ship Delaware II, NOAA

DATA NUMBER 3961

Instrument no. W-255X

Inst. depth -2

Float depth -0-

Water depth 2738

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 23 samples

COMMENTS - Toroid started drifting August 26th 2300z.

One hour vector averaged version used on TIMSAN and STATS.

DATA/ 45.17 F1H

VARIABLE * EAST NORTH SPEED
UNITS * CM/SEC CM/SEC CM/SEC

MEAN = 22.728 15.122 31.932
STD. DEV. = 2.042 2.029 1.219
VARIANCE = 4550.158 4467.659 1611.040
STD. DEV. = 67.455 66.841 40.138
KURTOSIS = 2.491 3.361 3.604
SKEWNESS = -.437 -.322 .276
MINIMUM = -149.552 -229.711 1.000
MAXIMUM = 166.508 192.290 243.000

EAST & NORTH

COVARIANCE = 1205.958
STD. ERR. OF COVARIANCE = 136.712
STD. DEV. OF COVARIANCE = 4503.109
CORRELATION COEFFICIENT = .267
VECTOR MEAN = 32.465
VECTOR VARIANCE = 4508.308
VECTOR STD. DEV. = 67.148

* SAMPLE SIZE = 1095 POINTS

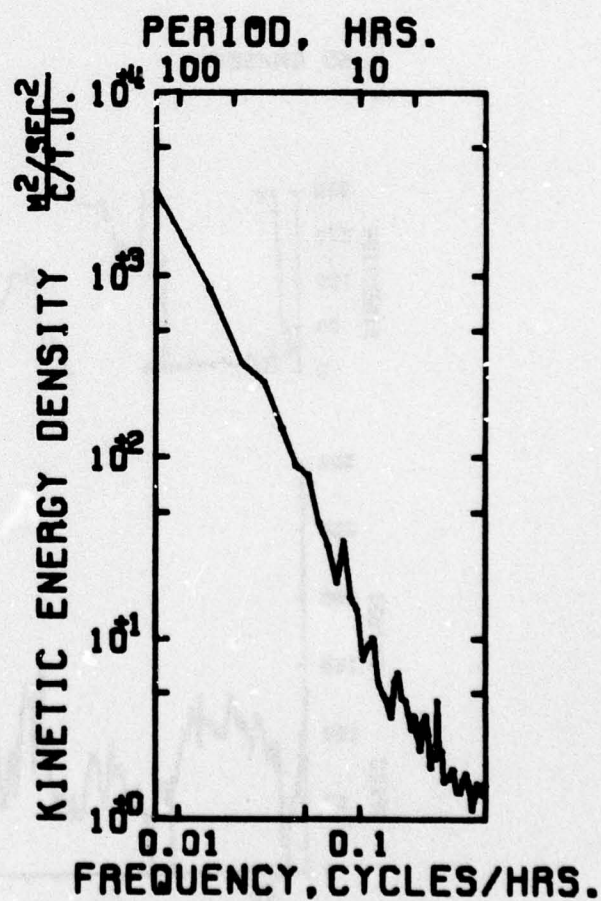
* SPANNING RANGE

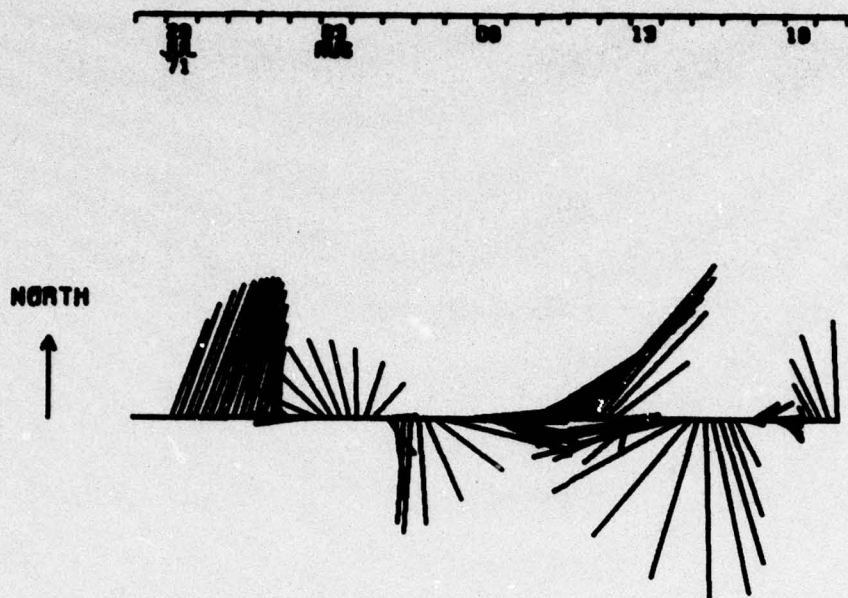
* FROM 71- VII-29 00.00.53

* TO 71- IX -11 04.00.53

* DURATION 45.17 DAYS

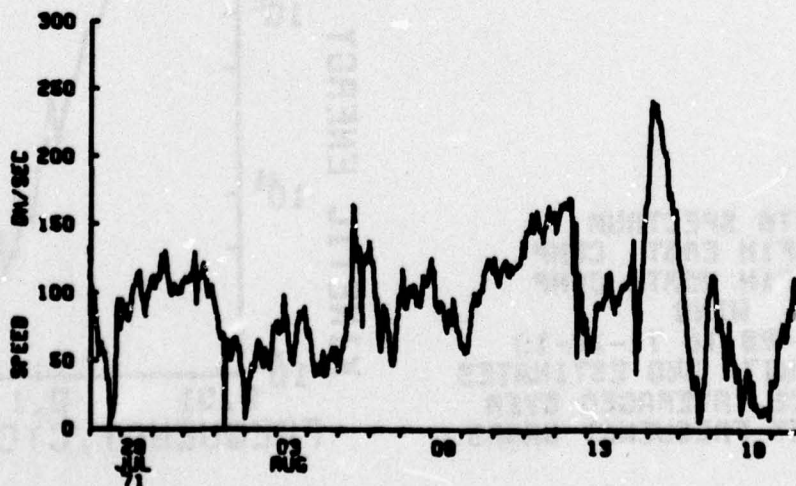
AUTO SPECTRUM
 3961WF1H EAST COMP
 3961WF1H NORTH COMP
 WIND
 71-VII-28 TO 71-IX-10
 1 PIECES WITH 540 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

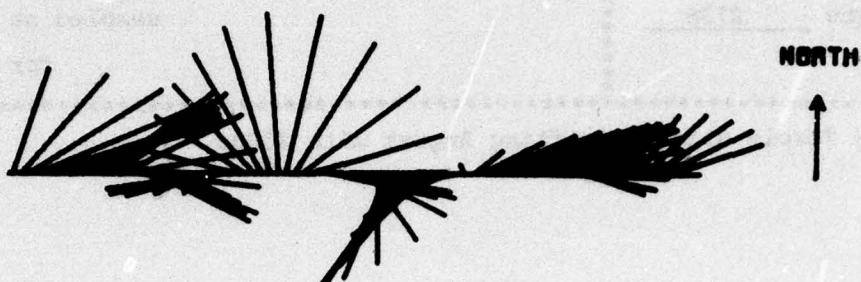
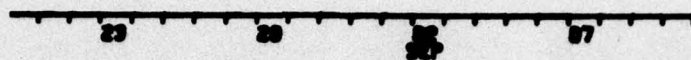




I 50 DM/SEC

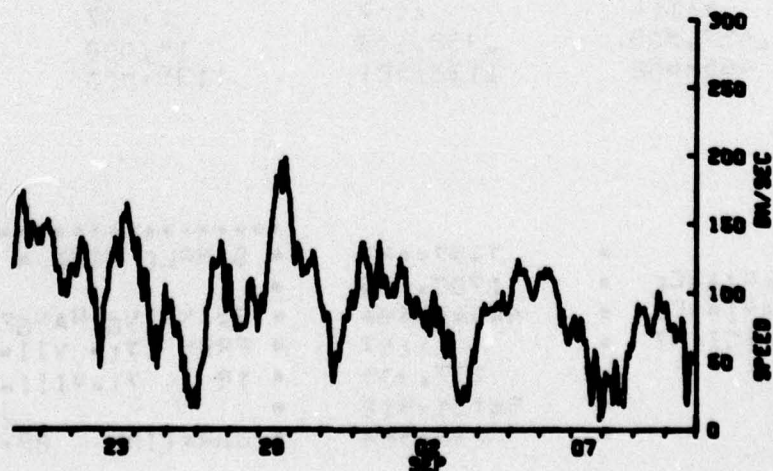
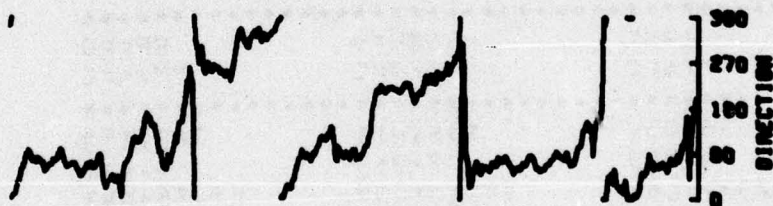
3961WF





3961WF

50 DM/SEC



DATA NUMBER 3963

Instrument no. M-249

Inst. depth 12

Float depth -0-

Water depth 2738

* Instrument sampling scheme

* VACM accumulated averages every sec

* X Model 850 data bursts every 1800 sec

* sampled at 5.27 sec

* for 23 samples

COMMENTS - Toroid started drifting August 26th 2300z.

DATA/ 3963F1800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      35.358      274.911      360.159
STD. ERR. =      3.949      7.913      6.436
VARIANCE  =    22392.086    89910.939    59486.243
STD. DEV. =    149.640    299.852    243.898
KURTOSIS  =      3.169      3.106      3.766
SKEWNESS  =      0.114      0.607      1.137
MINIMUM   =    -457.909    -352.102    14.000
MAXIMUM   =    495.602    1132.521    1138.000
*****
```

EAST & NORTH

```
COVARIANCE      =      7497.487
STD. ERR. OF COVARIANCE =      1700.625
STD. DEV. OF COVARIANCE =    64444.496
CORRELATION COEFFICIENT =      0.167
VECTOR MEAN      =      277.305
VECTOR VARIANCE   =    56151.512
VECTOR STD. DEV.  =      236.963
```

* SAMPLE SIZE = 1436 POINTS

*

* SPANNING RANGE

* FROM 71-VII-28 00.30.57

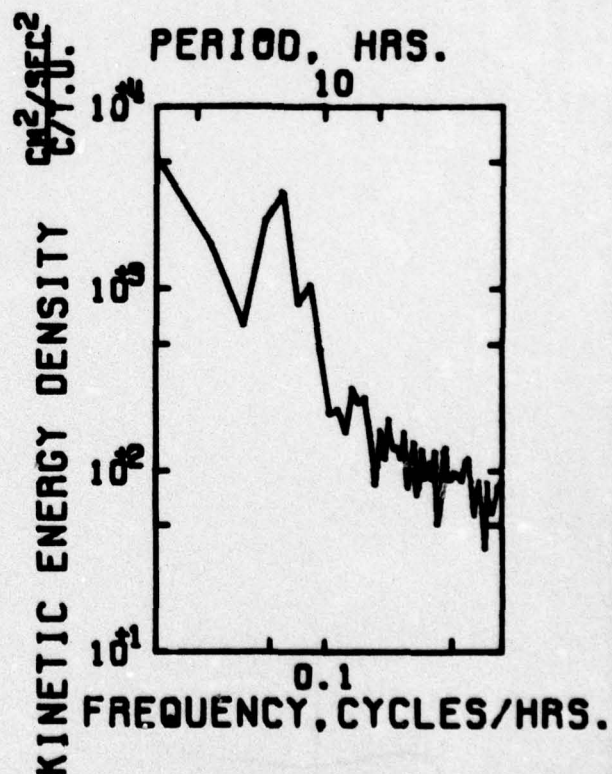
* TO 71-VIII-26 22.00.57

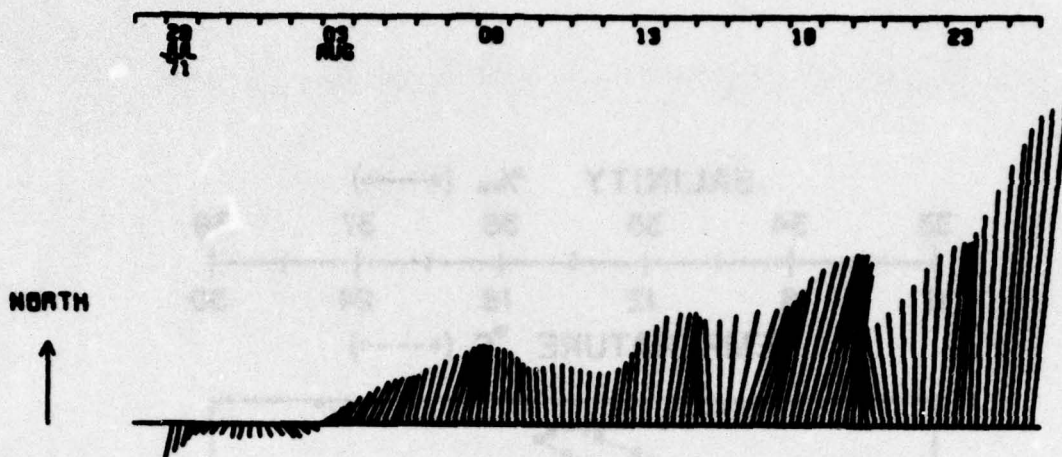
*

* DURATION 29.90 DAYS

BEST AVAILABLE COPY

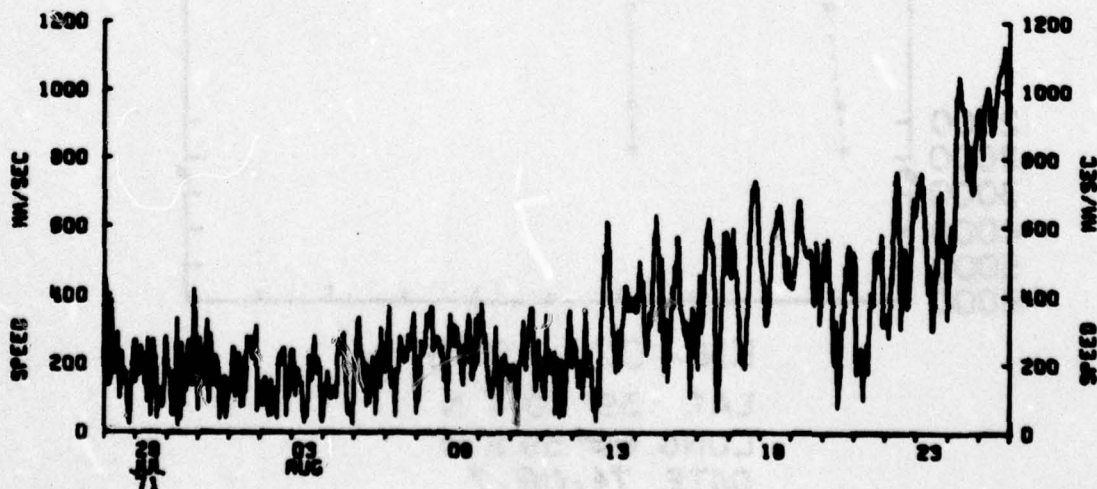
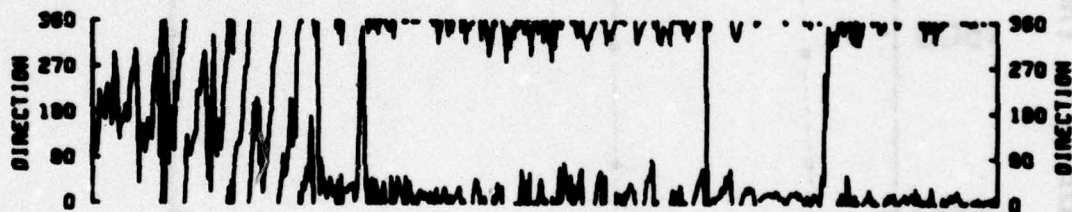
AUTO SPECTRUM
 3983E1800 EAST COMP
 3983E1800 NORTH COMP
 12 METERS
 71-VII-20 TO 71-VIII-25
 1 PIECES WITH 875 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

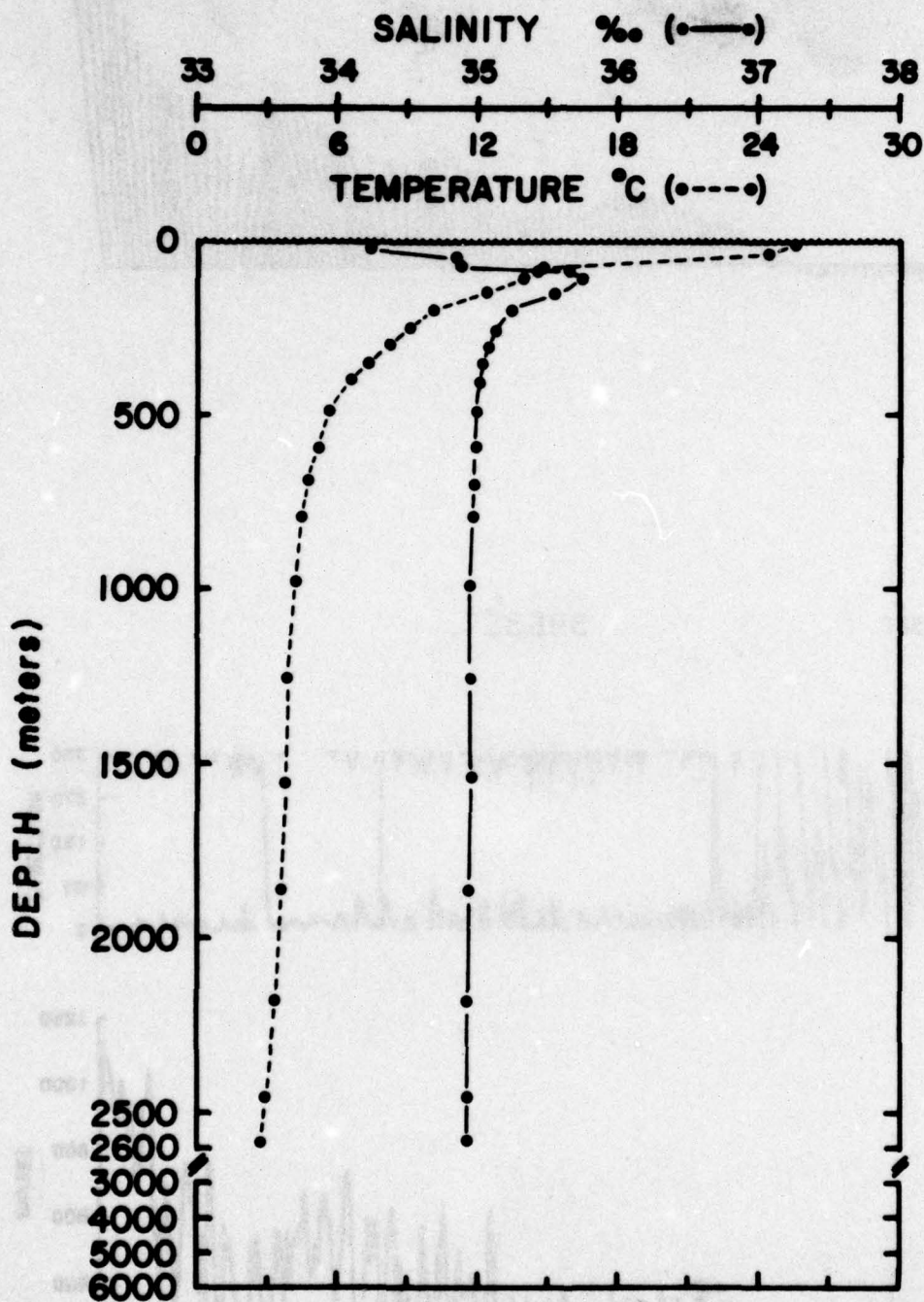




200 MM/SEC

3963E





KN - 023 - 079

LAT. 39° 10.4' N

LONG. 69° 59.8' W

DATE 71-08-7

MOORING NO. 397

Lat. 39° 08.8'N Long. 69° 56.5'W

Set July 28, 1971

Set by R. Heinmiller

Ship R. V. Knorr Cruise 23

Recovered September 11, 1971

Recovered by D. Moller

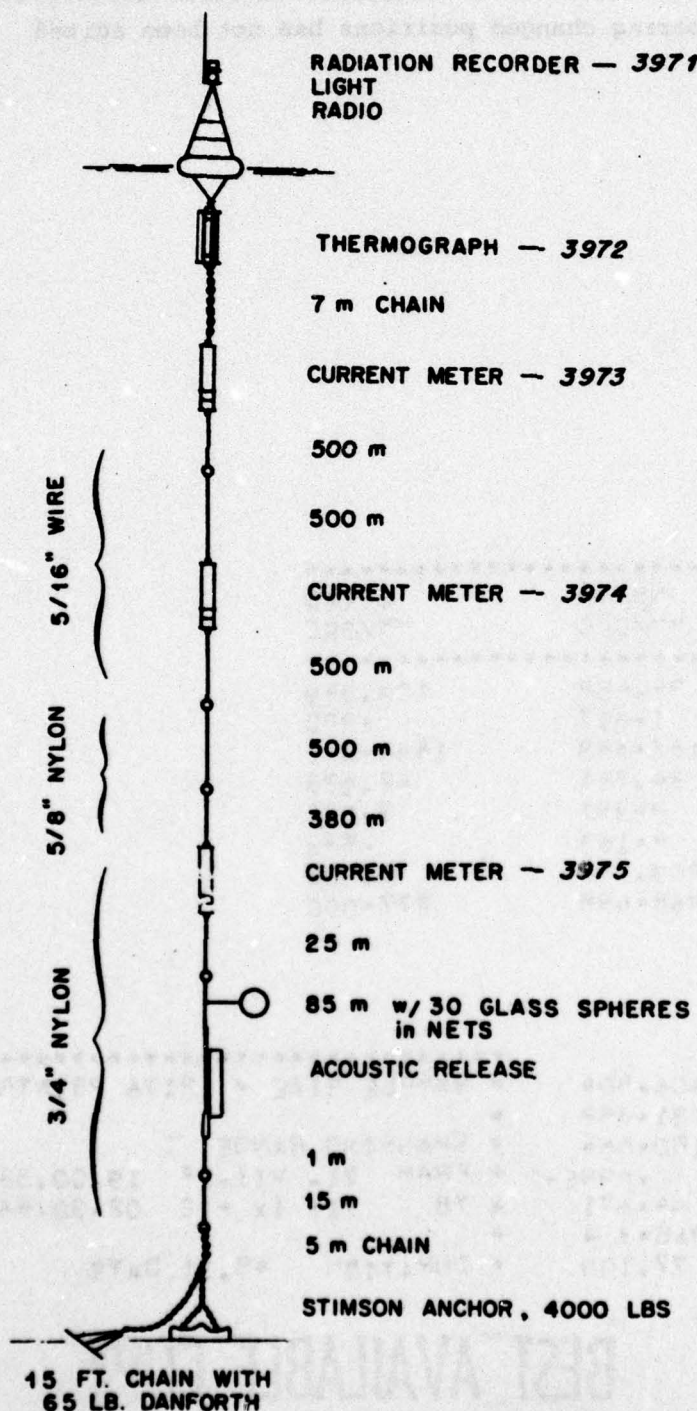
Ship Delaware II Cruise 71-3

Mooring type - Surface

Purpose of mooring

A) Current measurements at Site D

B) Thermograph array for P. Saunders moorings 395, 396 and 398



Data No.	Instr. Type	Depth (m)
3971	Radiation rec.	-2
3972	Temp	3
3973	Model 850	12
3974*	Model 850	1014
3975*	Model 850	2518
Water depth		2655

Comments

Aug 6 On station (R. V. Knorr)

Aug 10 Possible sighting by S. S. Florence 39° 16'N, 69° 15'W

Aug 16-20 Off station (Plane flights)

Aug 21 3 miles N X E of station. Fin no longer on buoy. Toroid half submerged (Cap'n Bill IV)

Aug 25 "Somewhat off station" (Aztec flight), heavy wake around buoy, direction 020° magnetic

Sept 3 39° 14'N, 69° 55'W

Sept 11 Recovered 5.5 miles north of station. No visual current

3973 Rotor jams after 10 days

DATA NUMBER 3974

Instrument no. M-173

Inst. depth 1014

Float depth -0-

Water depth 2655

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 24 samples

COMMENTS - The evidence that the mooring changed positions has not been edited
from this data.

DATA/ 3974/1800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

MEAN = -24.435 34.452 109.749
STD. ERR. = 1.470 1.817 .920
VARIANCE = 4703.726 7187.383 1842.342
STD. DEV. = 68.584 84.781 42.923
KURTOSIS = 2.879 2.391 3.238
SKEWNESS = .447 -.163 .532
MINIMUM = -211.031 -209.286 5.000
MAXIMUM = 214.651 268.698 277.000

EAST & NORTH

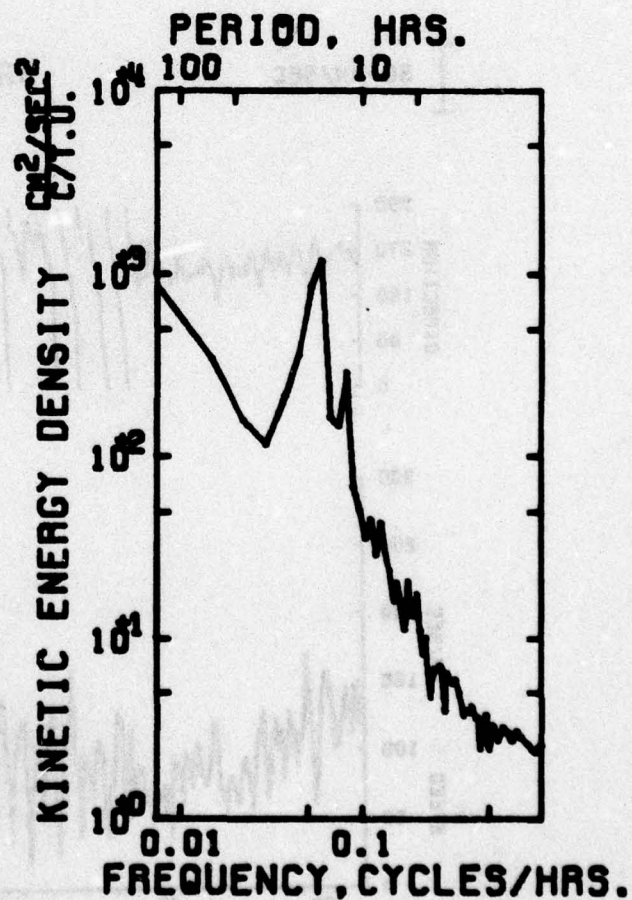
COVARIANCE
STD. ERR. OF COVARIANCE
STD. DEV. OF COVARIANCE
CORRELATION COEFFICIENT
VECTOR MEAN
VECTOR VARIANCE
VECTOR STD. DEV.

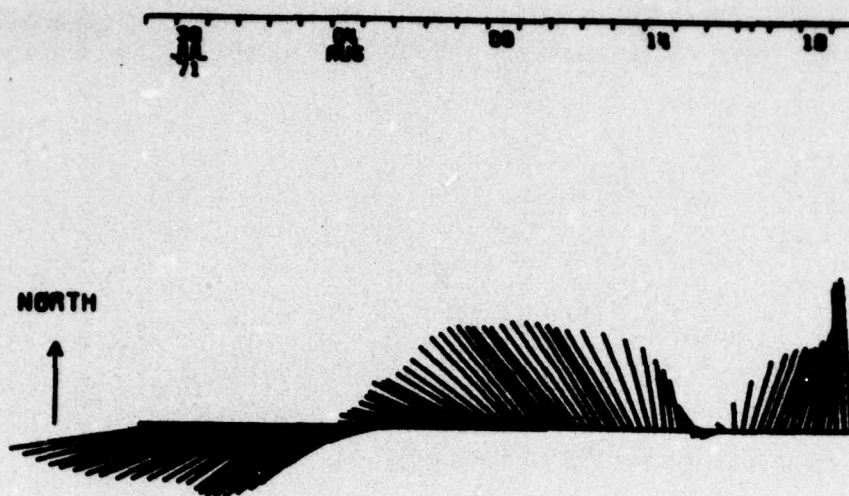
= 406.504
= 131.352
= 6150.564
= .699E-1
= 44.671
= 5945.304
= 77.109

* SAMPLE SIZE = 2176 POINTS
* SPANNING RANGE
* FROM 71- VII-28 19.00.58
* TO 71- IX -12 02.30.58
* DURATION 45.31 DAYS

BEST AVAILABLE COPY

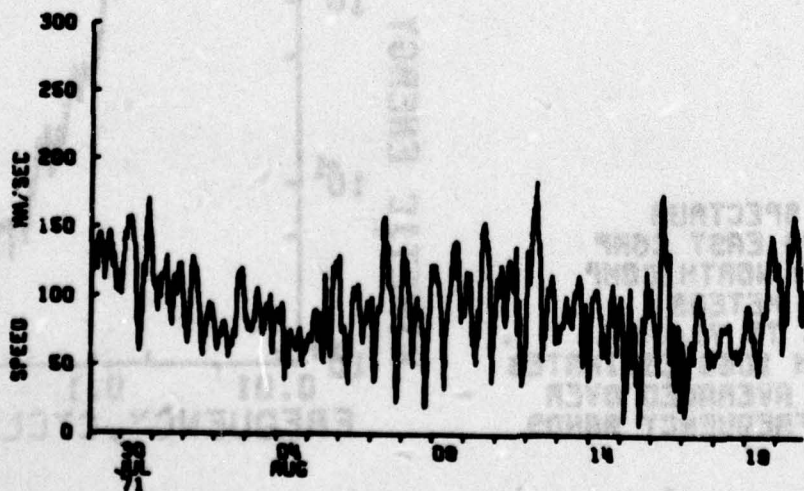
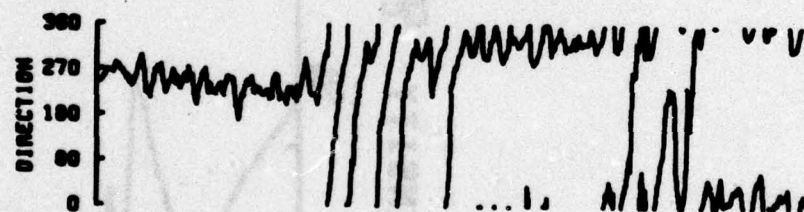
AUTO SPECTRUM
 3974K1800 EAST COMP
 3974K1800 NORTH COMP
 1014 METERS
 71-VII-28 TO 71-IX-11
 1 PIECES WITH 1000 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

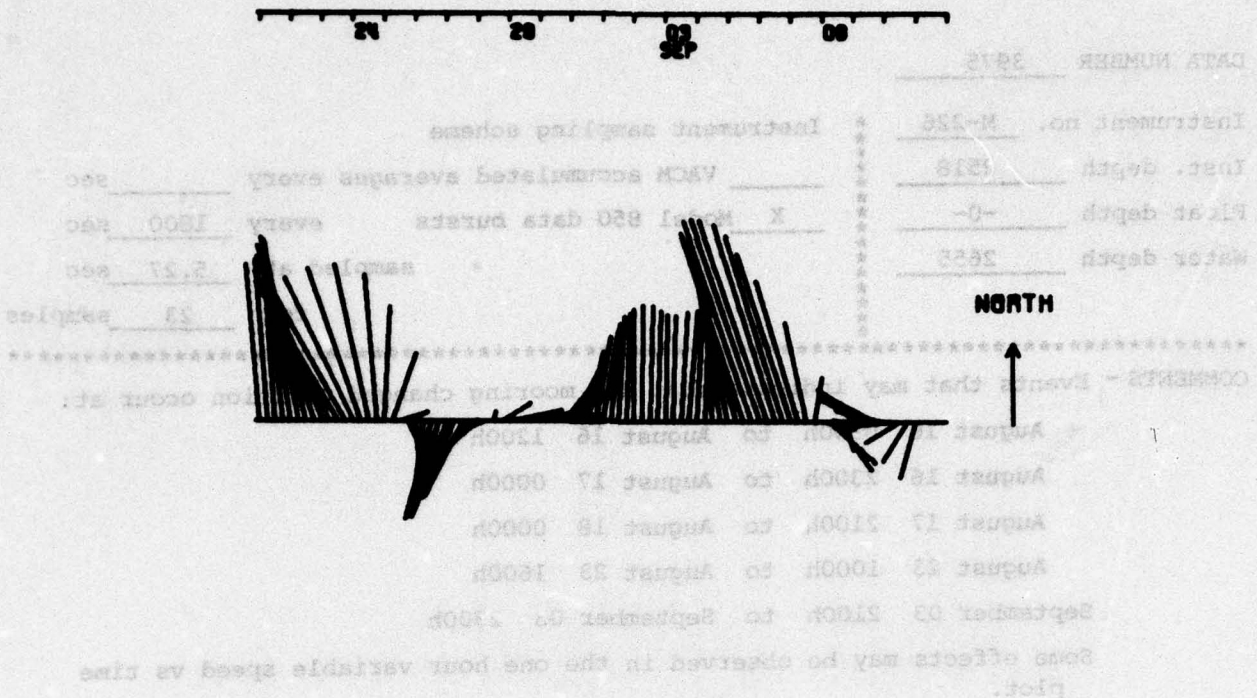




50 MM/SEC

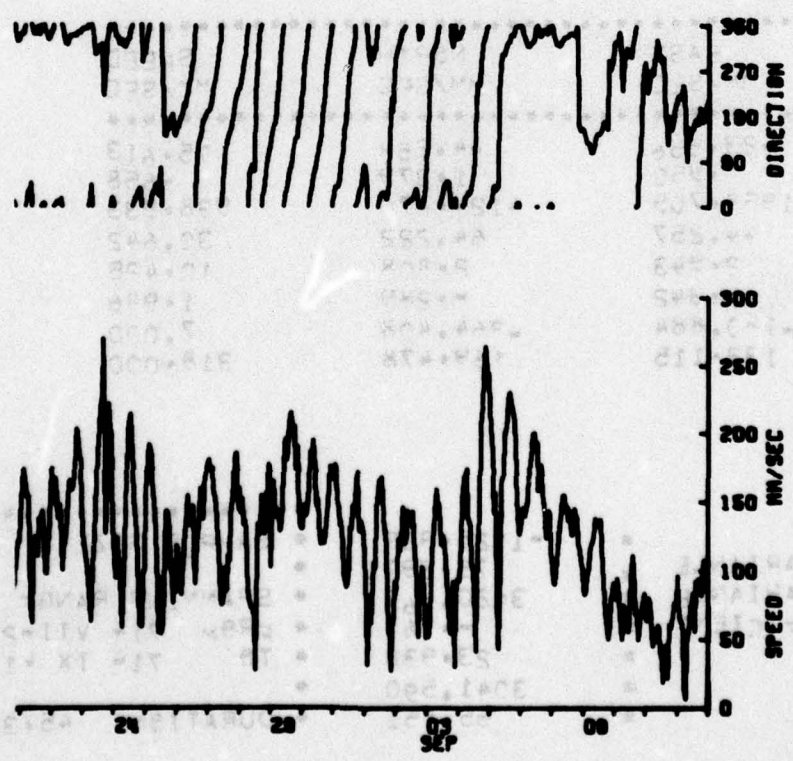
3974K





3974K

50 MM/SEC



DATA NUMBER 3975

Instrument no. M-226 * Instrument sampling scheme
Inst. depth 2518 * VACM accumulated averages every sec
Float depth -0- * X Model 850 data bursts every 1800 sec
Water depth 2655 * sampled at 5.27 sec
* for 23 samples

COMMENTS - Events that may indicate that the mooring changed position occur at:

August 16 0500h to August 16 1200h

August 16 2300h to August 17 0000h

August 17 2100h to August 18 0000h

August 23 1000h to August 23 1600h

September 03 2100h to September 03 2300h

Some effects may be observed in the one hour variable speed vs time plot.

DATA/ 397501800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

MEAN = -23.556 -4.258 75.613
STD. ERR. = .950 1.379 .658
VARIANCE = 1958.709 4124.470 938.933
STD. DEV. = 44.257 64.222 30.642
KURTOSIS = 2.943 2.808 10.425
SKEWNESS = .342 -.289 1.986
MINIMUM = -180.884 -264.408 7.000
MAXIMUM = 132.115 169.478 318.000

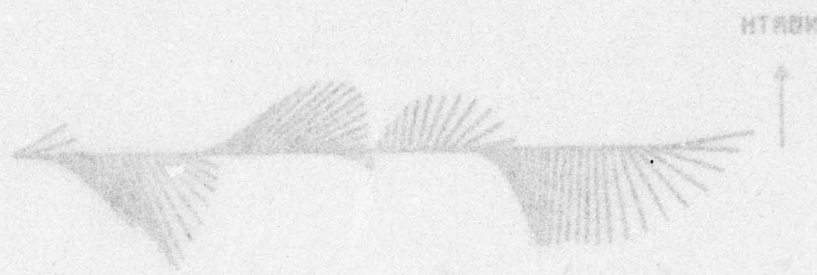
EAST & NORTH

COVARIANCE = -1025.939
STD. ERR. OF COVARIANCE = 75.597
STD. DEV. OF COVARIANCE = 3520.761
CORRELATION COEFFICIENT = -.361
VECTOR MEAN = 23.938
VECTOR VARIANCE = 3041.590
VECTOR STD. DEV. = 55.151

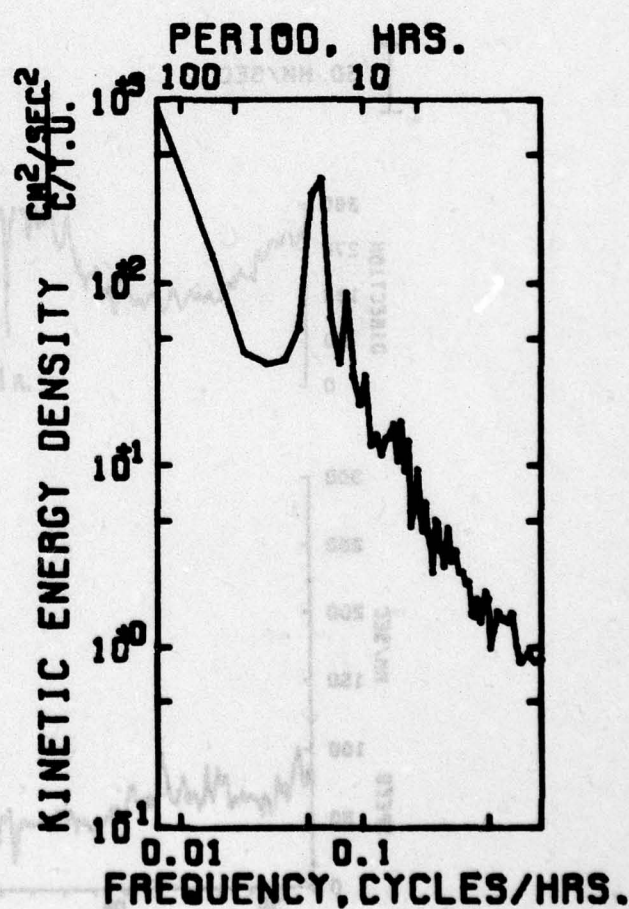
* SAMPLE SIZE = 2169 POINTS
*
* SPANNING RANGE
* FROM 71- VII-28 18.30.53
* TO 71- IX -12 02.30.53
*
* DURATION 45.33 DAYS

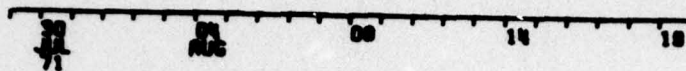
BEST AVAILABLE COPY

BEST AVAILABLE COPY

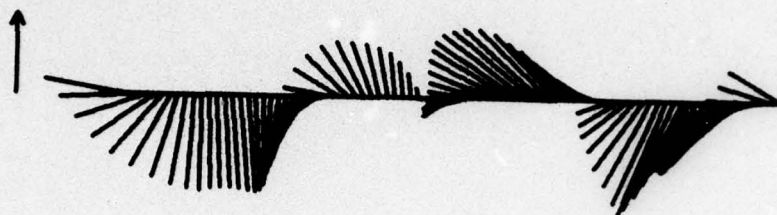


AUTO SPECTRUM
 3975G1800 EAST COMP
 3975G1800 NORTH COMP
 2518 METERS
 71-VII-28 TO 71-IX-11
 1 PIECES WITH 1000 ESTIMATES
 PER PIECE. AVERAGED OVER
 .8 ADJACENT FREQUENCY BANDS



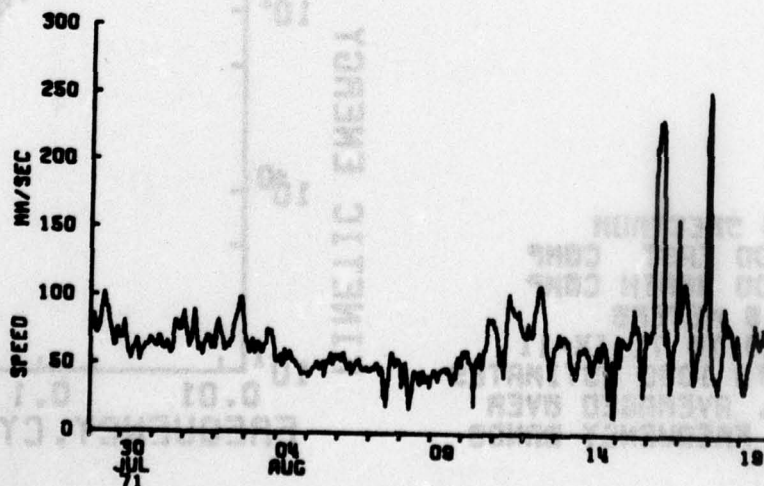
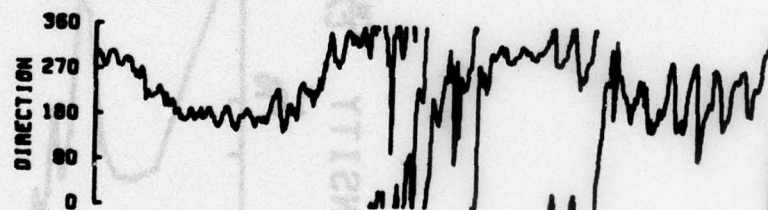


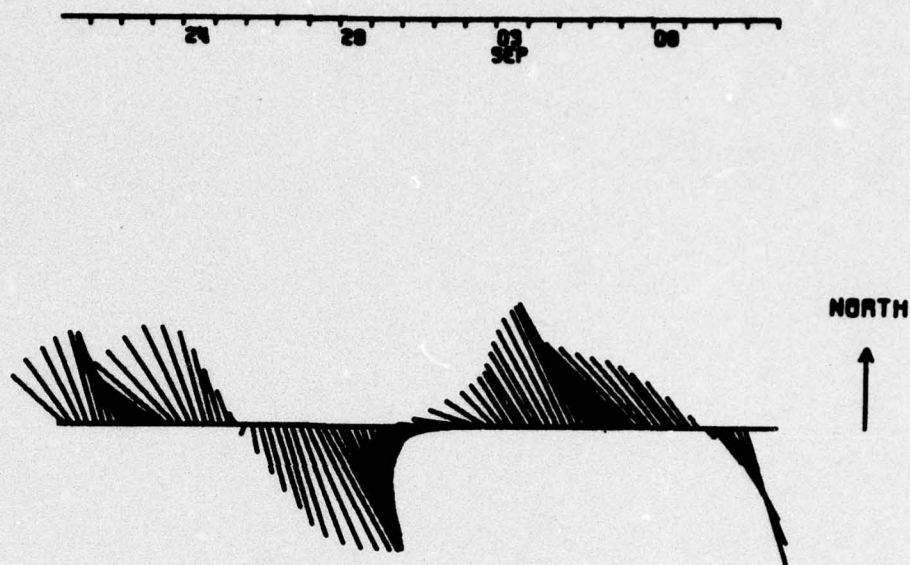
NORTH



50 MM/SEC

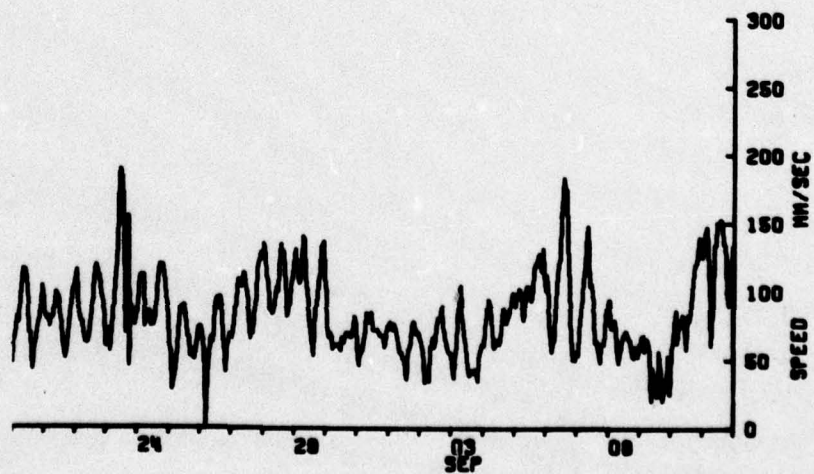
3975G





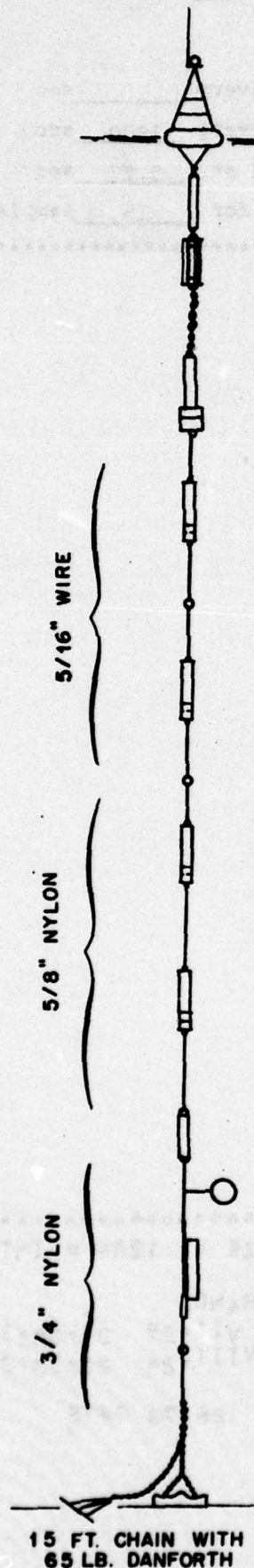
3975G

50 MM/SEC



MOORING NO. 398

Lat. 39° 08.7'N Long. 69° 59.9'W



LIGHT
RADIO

TENSIO METER,
TELEMETERING

THERMOGRAPH - 3982

7 m CHAIN

VACM - 3983

190 m

CURRENT METER - 3984

300 m

500 m

CURRENT METER - 3985

500 m

446 m

CURRENT METER - 3986

447 m

CURRENT METER - 3987

26 m

TENSIO METER - 3988

85 m w/ 30 GLASS
in NETS

ACOUSTIC RELEASE

1 m

15 m

5 m CHAIN

STIMSON ANCHOR,
4000 LBS

15 FT. CHAIN WITH
65 LB. DANFORTH

Set July 28, 1971

Set by R. Heinmiller

Ship R. V. Knorr Cruise 28

Recovered October 24, 1971

Recovered by D. Moller

Ship R.V. Atlantis I Cruise 63

Mooring type - Surface

Purpose of mooring

- A) Current measurements at Site D
- B) Thermograph array for P. Saunders with moorings 395, 396 and 397

	Data No.	Instr. Type	Depth (m)
300 m	3981	Tel tens.	2
	3982	Temp	3
500 m	3983	VACM	12
	3984	Model 850	204
	3985*	Model 850	1006
	3986*	Model 850	2006
	3987	Model 850	2508
	3988	Tens.	2539
CURRENT METER - 3986	Water depth		2660

Comments

- Aug 7 On station (R. V. Knorr)
- Aug 16-On station, strong current to 20 north (plane flight)
- Aug 21 On station. Buoy half submerged. Strong current N x E (Cap'n Bill IV)
- Aug 22 Radio off the air (W.H.O.I.)
- Aug 25 No surface float (Aztec flight)
- Sep 21 Unsuccessful attempt to hook mooring with ALVIN (submarine)
- Oct 24 Too much current, buoy floating subsurface. Dragged for mooring. Hooked mooring at meter 3986
- 3983 Rotor failed
- 3984 Flooded
- 3987 Instrument upside down in mooring line

DATA NUMBER 3985

Instrument no. M-269

Inst. depth 1006

Float depth -0-

Water depth 2660

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 15 samples

COMMENTS

DATA/ 3985F1800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

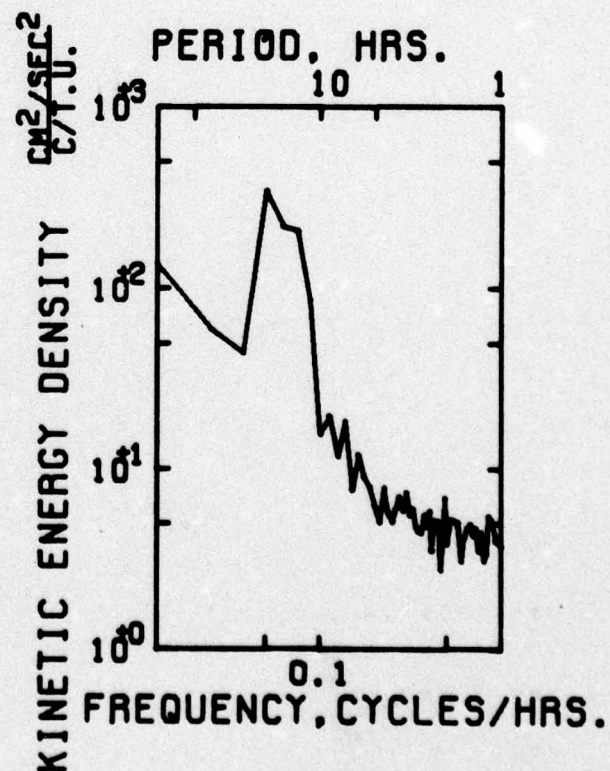
MEAN * -50.697 24.453 100.168
STD. ERR. * 1.518 2.030 1.038
VARIANCE * 2958.436 5289.668 1382.626
STD. DEV. * 54.392 72.730 37.184
KURTOSIS * 2.750 2.239 3.021
SKEWNESS * .324 .788E-1 .312
MINIMUM * -173.863 -223.938 7.507
MAXIMUM * 123.185 205.813 244.846

EAST & NORTH

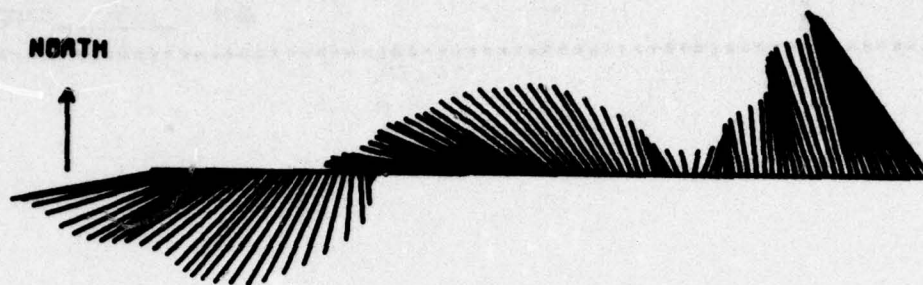
COVARIANCE * 472.071
STD. ERR. OF COVARIANCE * 139.795
STD. DEV. OF COVARIANCE * 5009.270
CORRELATION COEFFICIENT * .119
VECTOR MEAN * 56.286
VECTOR VARIANCE * 4124.052
VECTOR STD. DEV. * 64.219

* SAMPLE SIZE * 1284 POINTS
*
* SPANNING RANGE
* FROM 71-VII-29 04:00:37
* TO 71-VIII-24 21:30:37
*
* DURATION 26.73 DAYS

AUTO SPECTRUM
 3985F1800 EAST COMP
 3985F1800 NORTH COMP
 1006 METERS
 71-VII-29 TO 71-VIII-24
 1 PIECES WITH 640 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

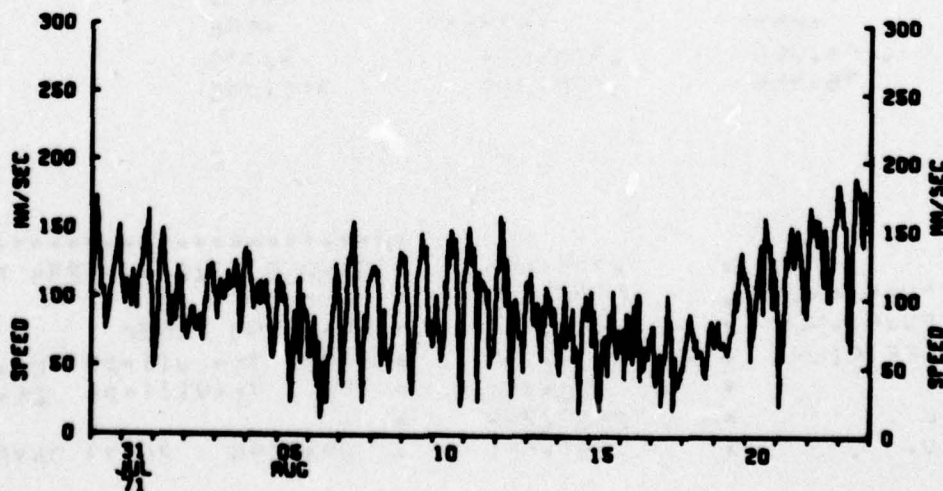
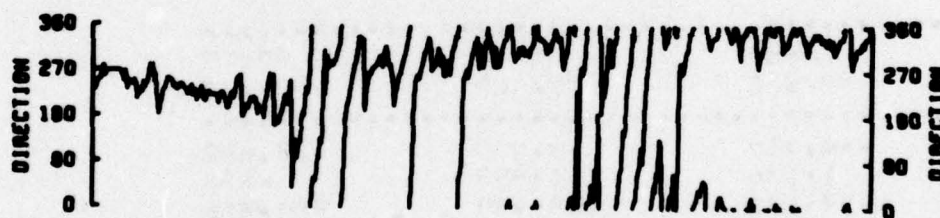


31 AUG 05 10 15 20



50 MM/SEC

3985F



DATA NUMBER 3986

Instrument no. M-257

Inst. depth 2006

Float depth -0-

Water depth 2660

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 15 samples

COMMENTS

DATA/ 398601200

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

MEAN = -49.717 7.900 22.942
STD. ERR. = 1.136 1.693 .878
VARIANCE = 1657.131 3478.453 990.516
STD. DEV. = 40.708 60.650 31.472
KURTOSIS = 2.921 2.692 5.159
SKEWNESS = .289 .674E-2 .586
MINIMUM = -164.000 -305.024 3.000
MAXIMUM = 76.555 170.211 311.000

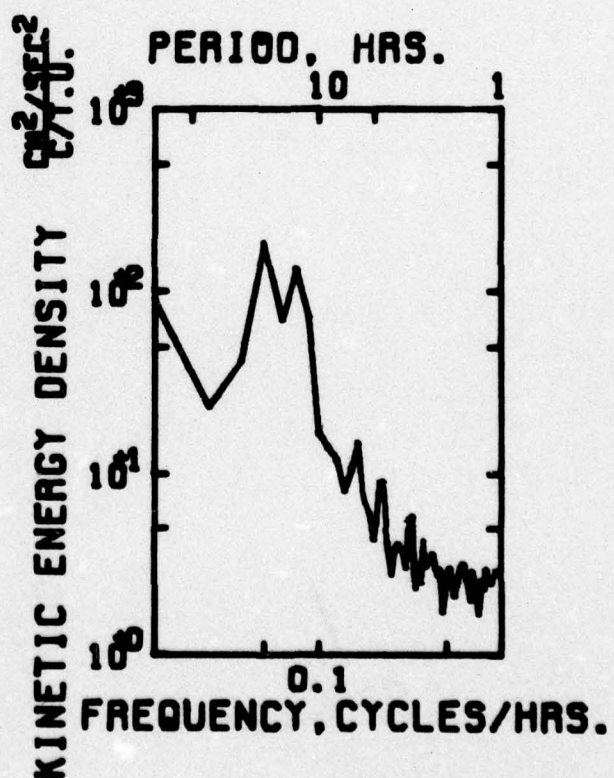
EAST & NORTH

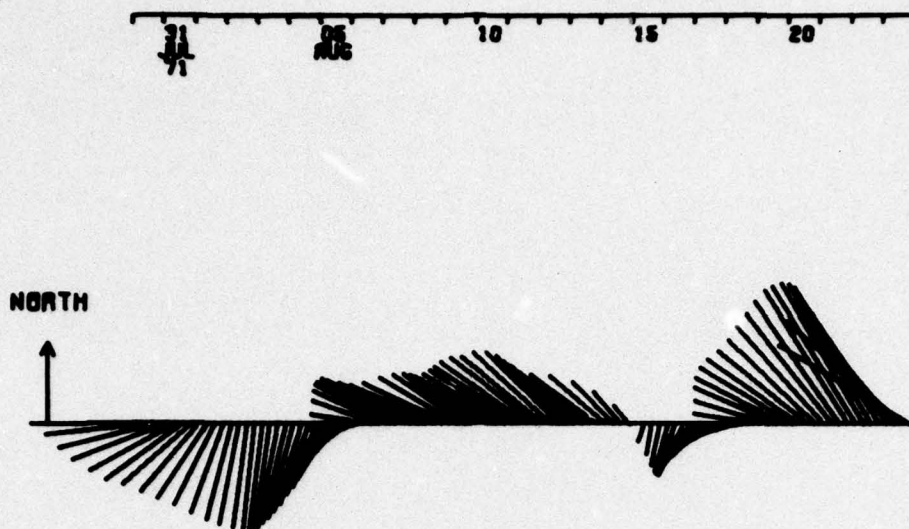
COVARIANCE = -728.638
STD. ERR. OF COVARIANCE = 96.933
STD. DEV. OF COVARIANCE = 3473.413
CORRELATION COEFFICIENT = -.295
VECTOR MEAN = 50.341
VECTOR VARIANCE = 2667.792
VECTOR STD. DEV. = 51.651

* SAMPLE SIZE = 1284 POINTS
*
* SPANNING RANGE
* FROM 71-VII-29 04:00:37
* TO 71-VIII-24 21:30:37
*
* DURATION 26.73 DAYS

BEST AVAILABLE COPY

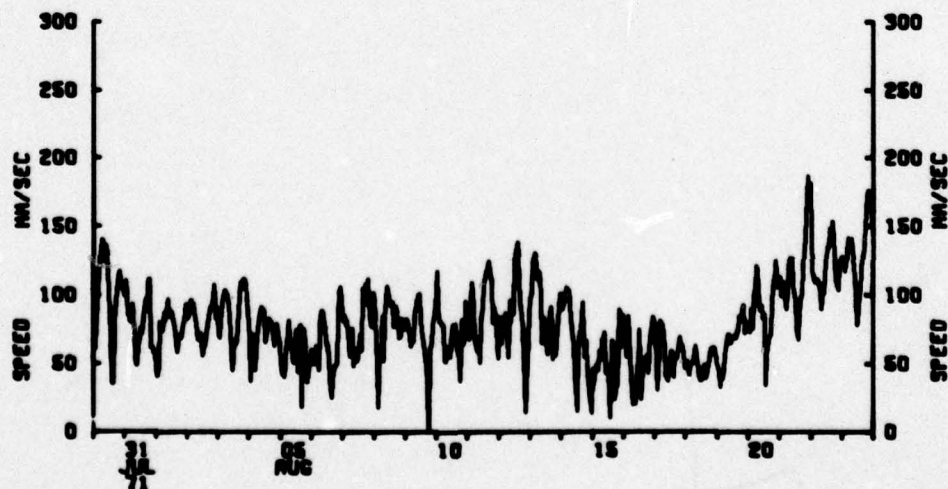
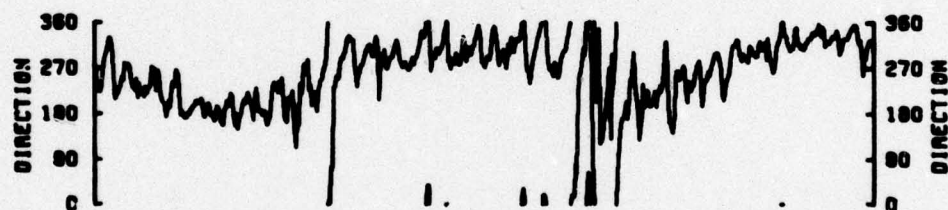
AUTO SPECTRUM
 3986C1800 EAST COMP
 3986C1800 NORTH COMP
 2008 METERS
 71-VII-29 TO 71-VIII-24
 1 PIECES WITH 640 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





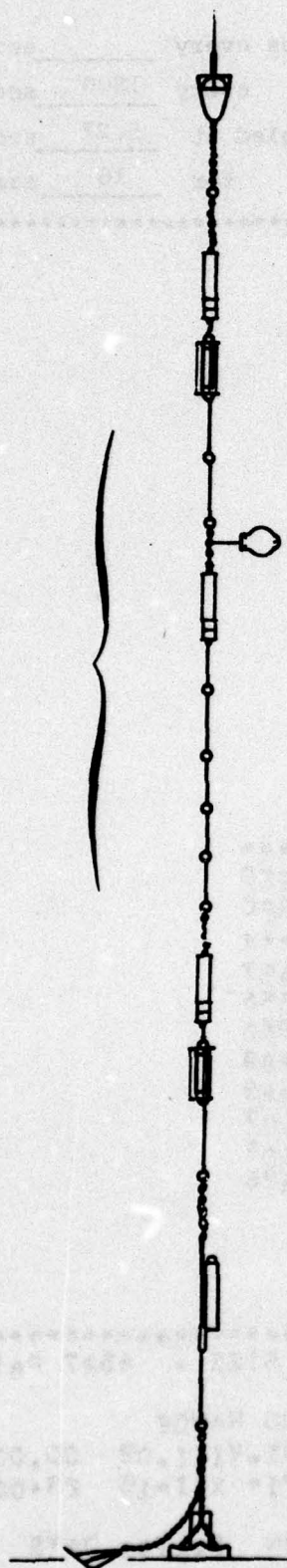
50 MM/SEC

3986C



MOORING NO. 400

Lat. 35° 56.8'N Long. 70° 25.8'W



RADIO FLOAT
WITH LIGHT

1m 1/2" CHAIN

10m CHAIN w/8
SPHERES IN HARD HATS
CURRENT METER

DEPTH RECORDER

437 m

485 m

12 m 3/8" CHAIN w/12
SPHERES IN HARD HATS
CURRENT METER

44 m

89 m

221 m

115 m

445 m

11 m 3/8" CHAIN w/10
SPHERES IN HARD HATS
CURRENT METER

INCLINOMETER

340 m 9/16" NYLON

5 m 1/2" CHAIN w/4 SPHERES IN
HARD HATS

ACOUSTIC RELEASE,
TRANSPONDING

20 m 3/4" NYLON

10m 1/2" CHAIN

STIMSON ANCHOR, 1900 LBS
w/1000 LB CYLINDER

15 FT. CHAIN WITH
65 LB. DANFORTH

Set August 1, 1971

Set by R. Heinmiller

Ship R. V. Knorr Cruise 23

Recovered December 15, 1971

Recovered by J. Gifford

Ship R.V. Atlantis II Cruise 66

Mooring type - Intermediate

Purpose of mooring

Long term measurements at Site J

Data No.	Instr. Type	Depth (m)
4001*	Model 850	2037
4002	Depth rec.	2038
4003	Model 850	3017
4004*	Model 850	4003
4005	Incl.	4004

Water depth 4447

Comments

4003 flooded instrument

DATA NUMBER 4001

Instrument no. M-227

Inst. depth 2037

Float depth 2023

Water depth 4447

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 16 samples

COMMENTS

DATA/ 4001F1800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

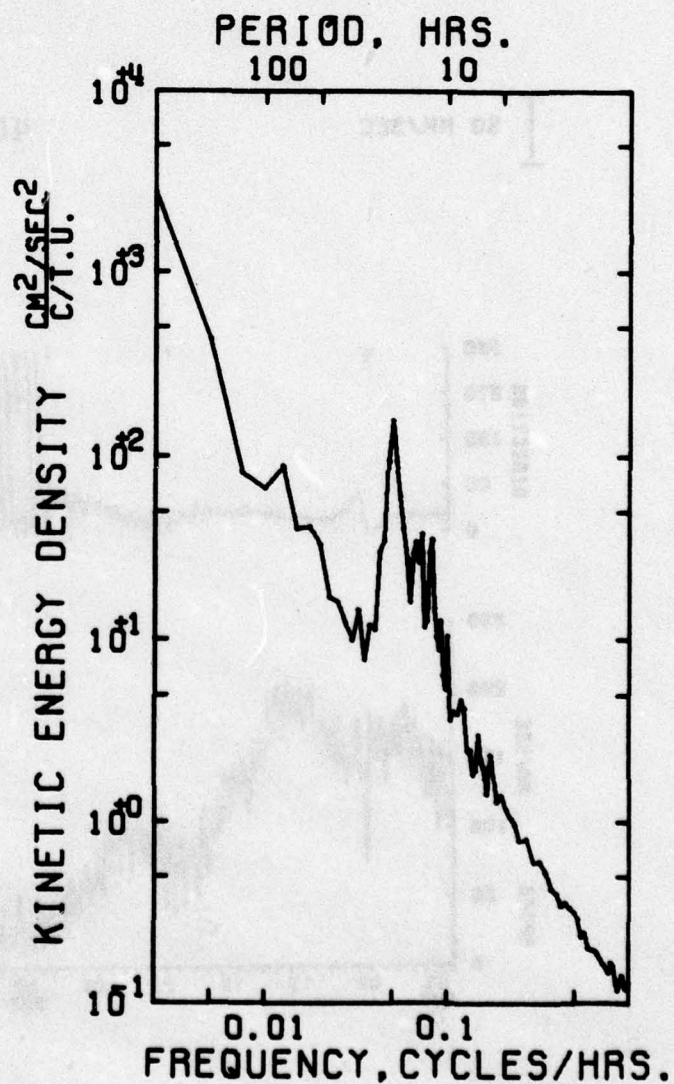
MEAN * 17.478 32.457 67.457
STD. ERR. * .637 .626 .556
VARIANCE * 2650.531 2555.869 2014.980
STD. DEV. * 51.483 50.556 44.889
KURTOSIS * 2.254 3.625 3.449
SKEWNESS * .225E-1 .849 1.107
MINIMUM * -117.209 -91.164 3.107
MAXIMUM * 163.637 192.124 207.826

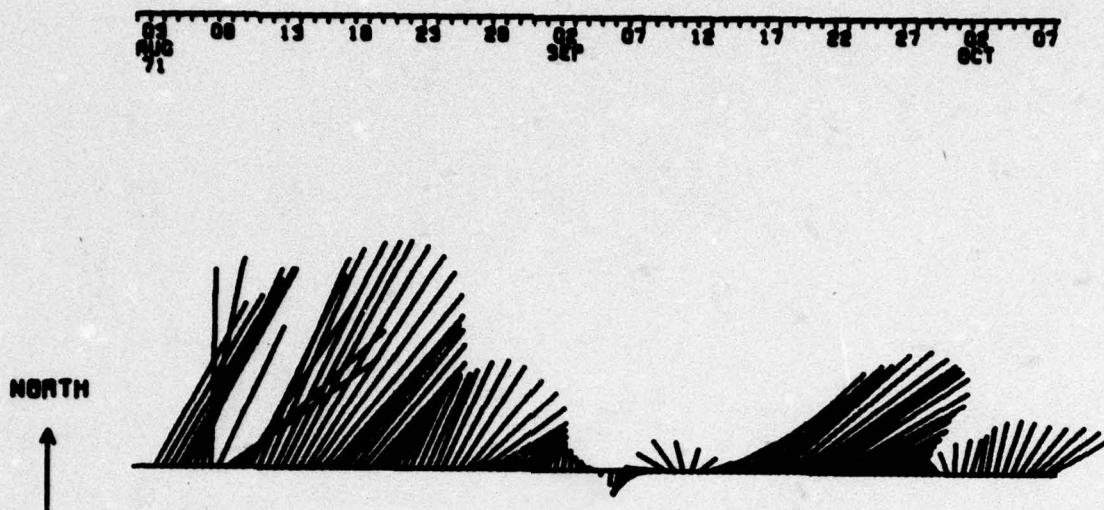
EAST & NORTH

COVARIANCE * 1235.232
STD. ERR. OF COVARIANCE * 51.078
STD. DEV. OF COVARIANCE * 4126.553
CORRELATION COEFFICIENT * .475
VECTOR MEAN * 36.864
VECTOR VARIANCE * 2603.200
VECTOR STD. DEV. * 51.022

* SAMPLE SIZE = 6527 POINTS
*
* SPANNING RANGE
* FROM 71-VIII.02 00.00.37
* TO 71-XII-15 23.00.37
*
* DURATION 135.96 DAYS

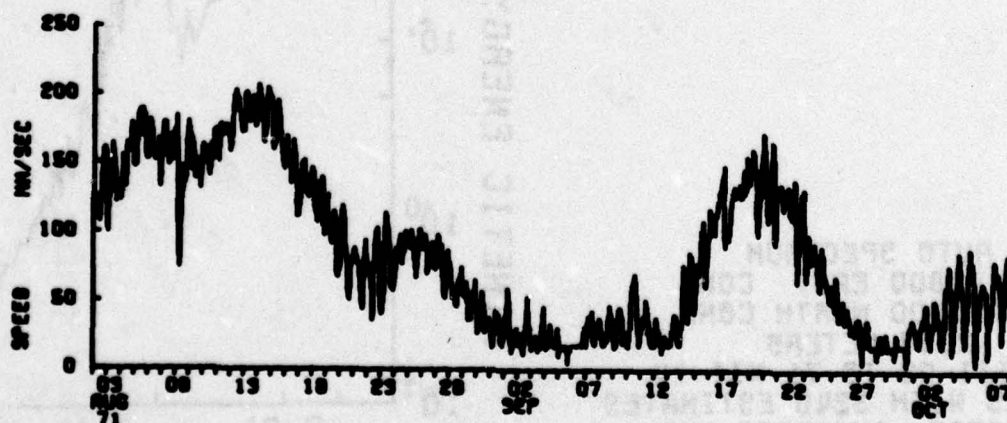
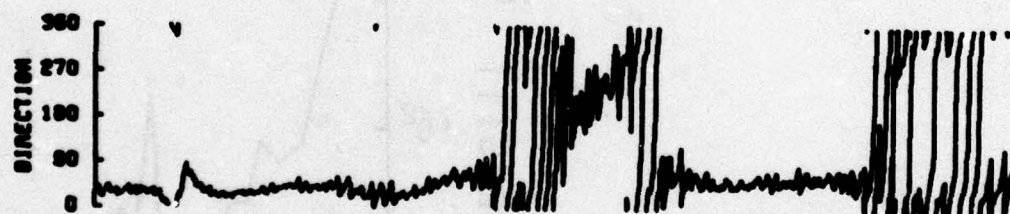
AUTO SPECTRUM
 4001F1800 EAST COMP
 4001F1800 NORTH COMP
 2097 METERS
 71-VIII-02 TO 71-XII-14
 1 PIECES WITH 3240 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

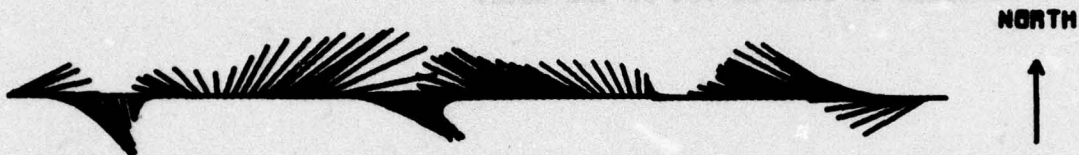
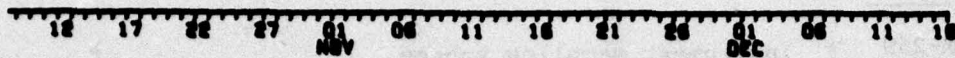




50 MM/SEC

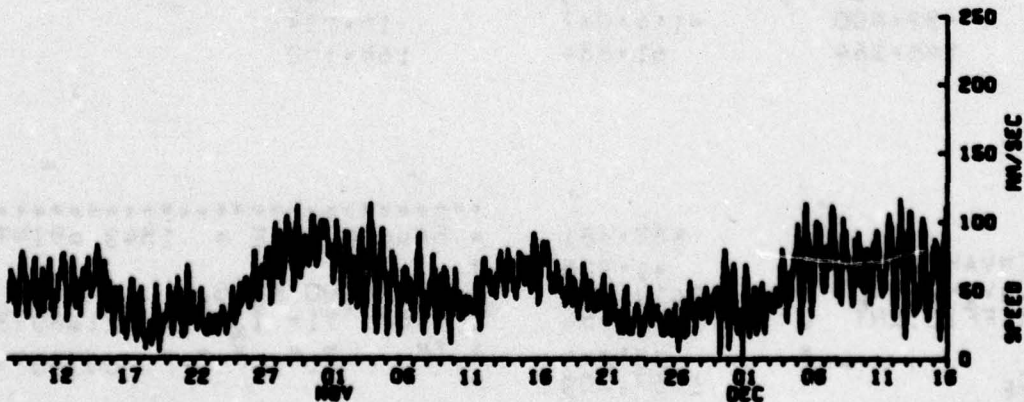
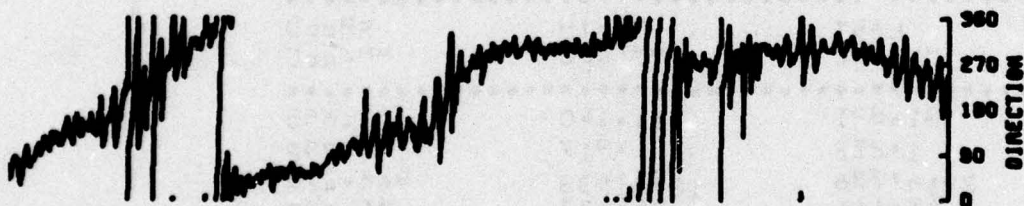
4001F





4001F

50 MM/SEC



DATA NUMBER 4004

Instrument no. M-259

Inst. depth 4003

Float depth 2023

Water depth 4447

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 15 samples

COMMENTS - Instrument appears to have been fouled in the hardhats - rotor
was broken and the rods smashed. Channel switching failure
resulted in loss of 75% of the data.

DATA/ 4004A1800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

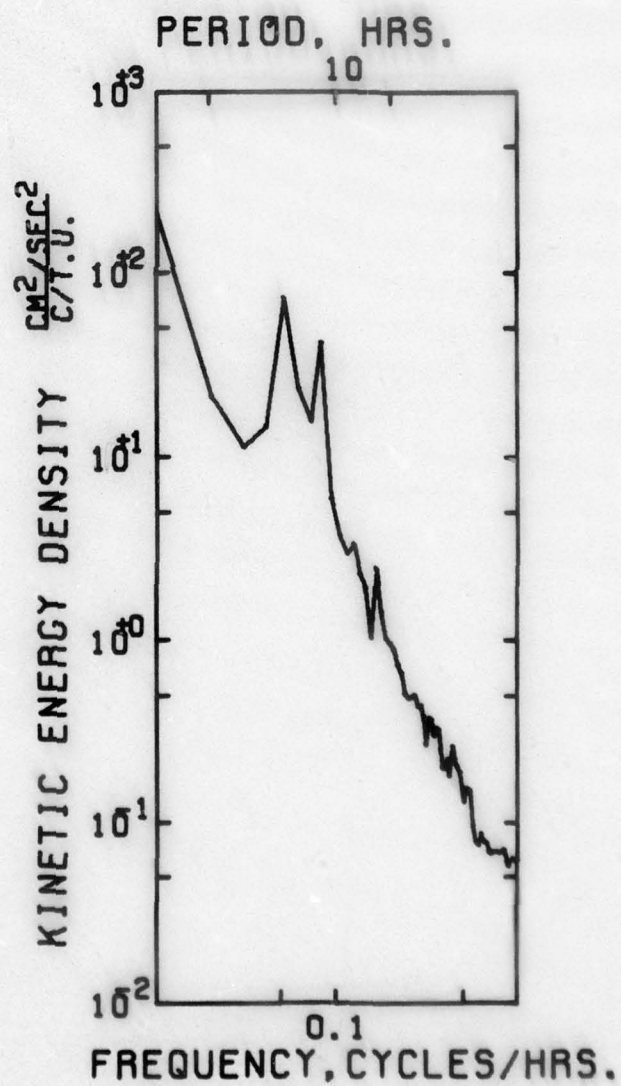
MEAN * 31.321 -11.140 62.065
STD. ERR. * 1.252 .917 .792
VARIANCE * 2416.786 1298.633 968.479
STD. DEV. * 49.161 36.037 31.120
KURTOSIS * 2.589 2.994 3.051
SKEWNESS * .768E-1 -.753 .640
MINIMUM * -92.800 -116.087 16.034
MAXIMUM * 160.164 61.684 168.102

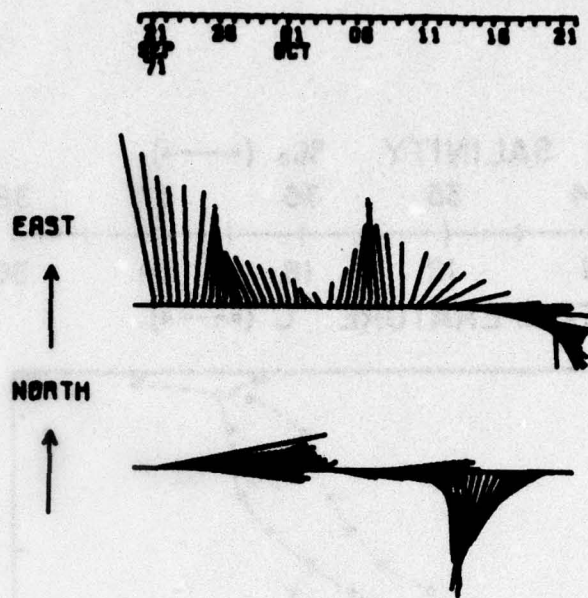
EAST & NORTH

COVARIANCE * 882.481
STD. ERR. OF COVARIANCE * 41.228
STD. DEV. OF COVARIANCE * 1619.465
CORRELATION COEFFICIENT * .498
VECTOR MEAN * 33.244
VECTOR VARIANCE * 1857.709
VECTOR STD. DEV. * 43.101

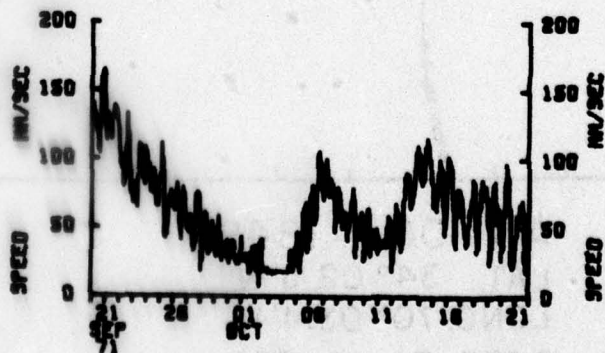
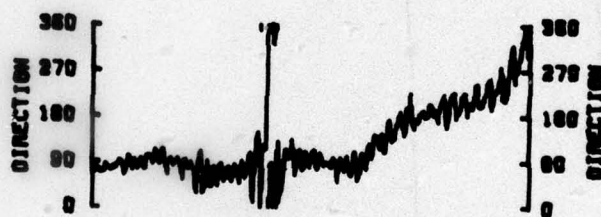
* SAMPLE SIZE = 1543 PRINTS
*
* SPANNING RANGE
* FROM 71-19 21.30.37
* TO 71-22 00.30.37
*
* DURATION 32.13 DAYS

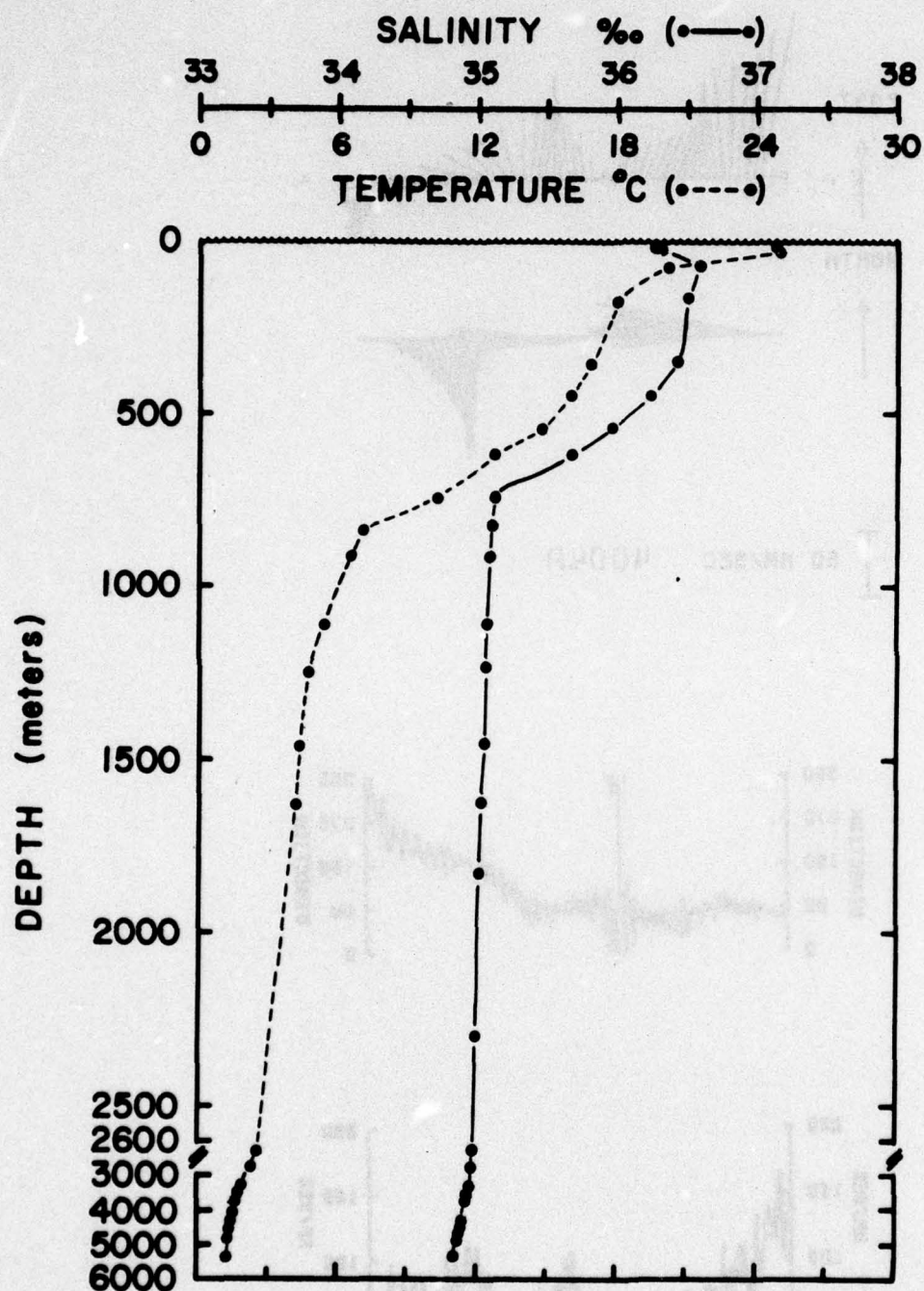
AUTO SPECTRUM
 4004A1800 EAST COMP
 4004A1800 NORTH COMP
 4003 METERS
 71-IX-19 TO 71-X-21
 1 PIECES WITH 768 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





50 MM/SEC 4004A





AN - 063 - 1848
LAT. 34° 02.5' N
LONG. 70° 03.4' W
DATE 71-10-27

MOORING NO. 404

Lat. 34° 01.0'N Long. 70° 00.8'W

Set October 26, 1971

Set by D. Moller

Ship R.V. Atlantis II Cruise 63

Recovered November 7, 1972

Recovered by J. Gifford

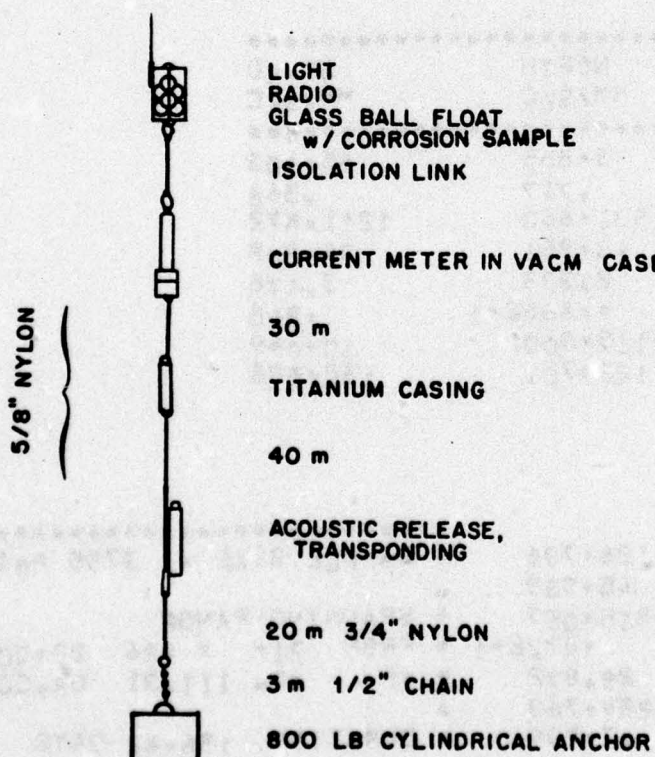
Ship R. V. Chain Cruise 107

Mooring type - Bottom

Purpose of mooring

- A) Current measurements at Site L
- B) Engineering corrosion test

<u>Data</u> <u>No.</u>	<u>Instr.</u> <u>Type</u>	<u>Depth</u> <u>(m)</u>
4041*	Model 850	5270
Water depth		5368



Comments

CURRENT METER IN VACM CASE 4041 had model 850 electronics in a VACM pressure case

DATA NUMBER 4041

Instrument no. M-213

Inst. depth 5270

Float depth 5265

Water depth 5368

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 3600 sec

sampled at 5.27 sec

for 16 samples

COMMENTS - The instrument case leaked. There are no rotor data after March 31st.

DATA/ 4041B1HA

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

MEAN * -29.421 3.855 65.103
STD. ERR. * .838 .717 .568
VARIANCE * 2637.866 1931.660 1211.572
STD. DEV. * 51.360 43.951 34.808
KURTOSIS * 2.660 2.333 3.176
SKEWNESS * -.318 -.866E-1 .840
MINIMUM * -181.439 -119.900 10.049
MAXIMUM * 97.442 122.701 188.598

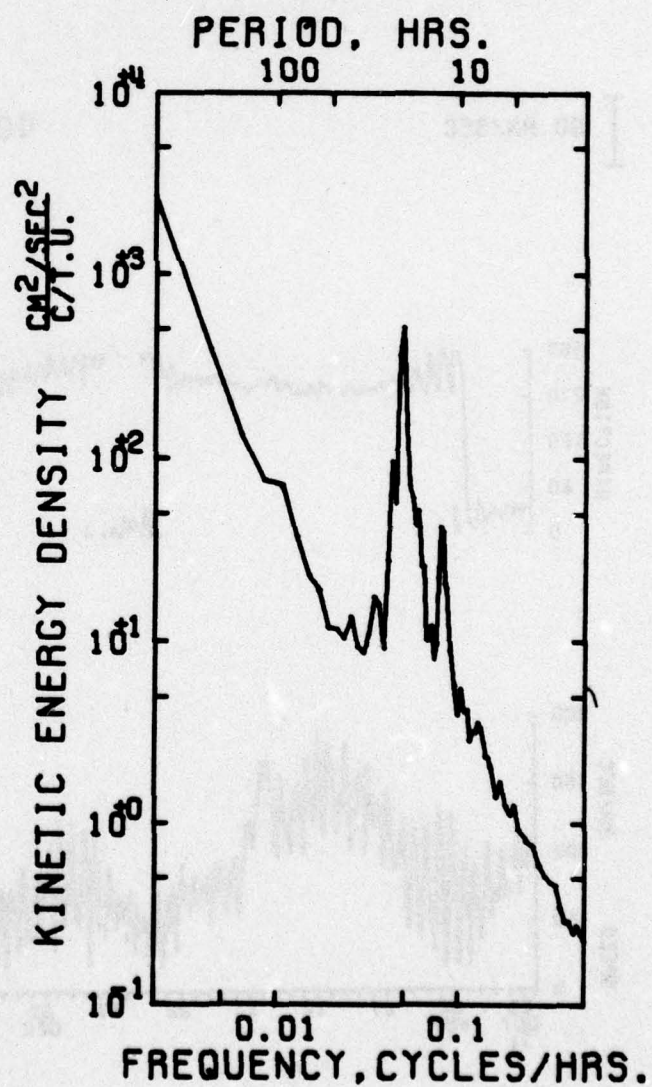
EAST & NORTH

COVARIANCE *
STD. ERR. OF COVARIANCE *
STD. DEV. OF COVARIANCE *
CORRELATION COEFFICIENT *
VECTOR MEAN *
VECTOR VARIANCE *
VECTOR STD. DEV. *

196.736
45.939
2815.057
.872E-1
29.672
2284.763
47.799

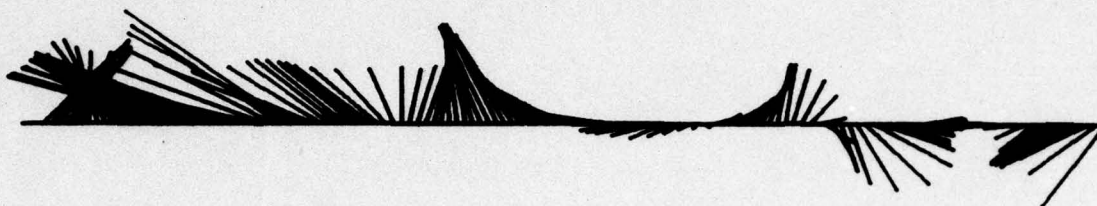
* SAMPLE SIZE * 3755 POINTS
*
* SPANNING RANGE
* FROM 71- X .26 22.00.37
* TO 72- 111.31 08.00.37
*
* DURATION 156.42 DAYS

AUTO SPECTRUM
 404181HA EAST COMP
 404181HA NORTH COMP
 5270 METERS
 71-X-26 TO 72-III-31
 1 PIECES WITH 1875 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



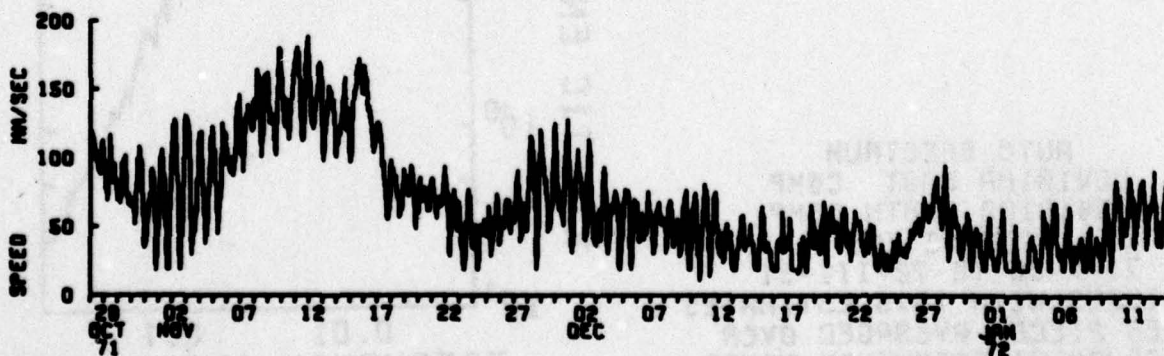
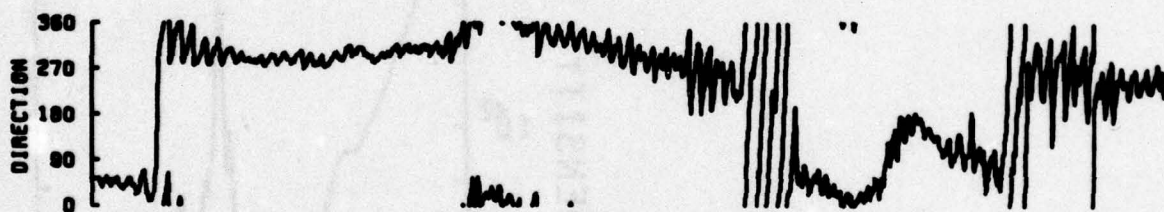
29 OCT 71 05 NOV 07 12 17 22 27 02 DEC 07 12 17 22 27 01 JAN 72 06 11

NORTH

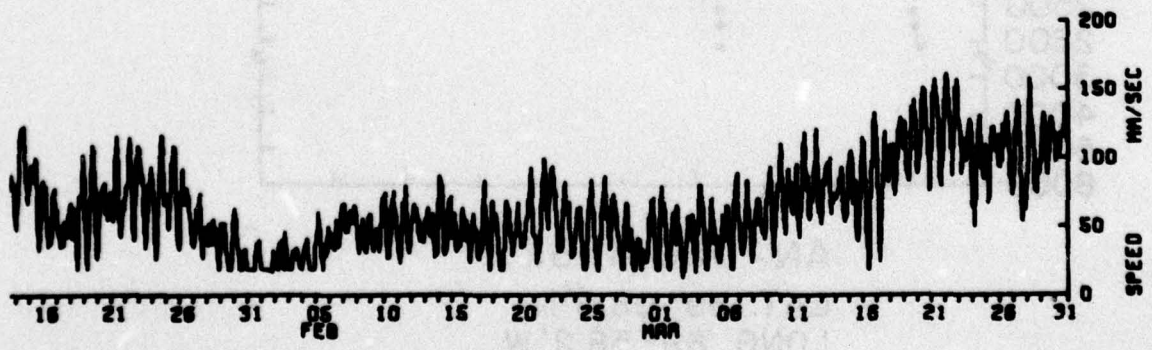


50 MM/SEC

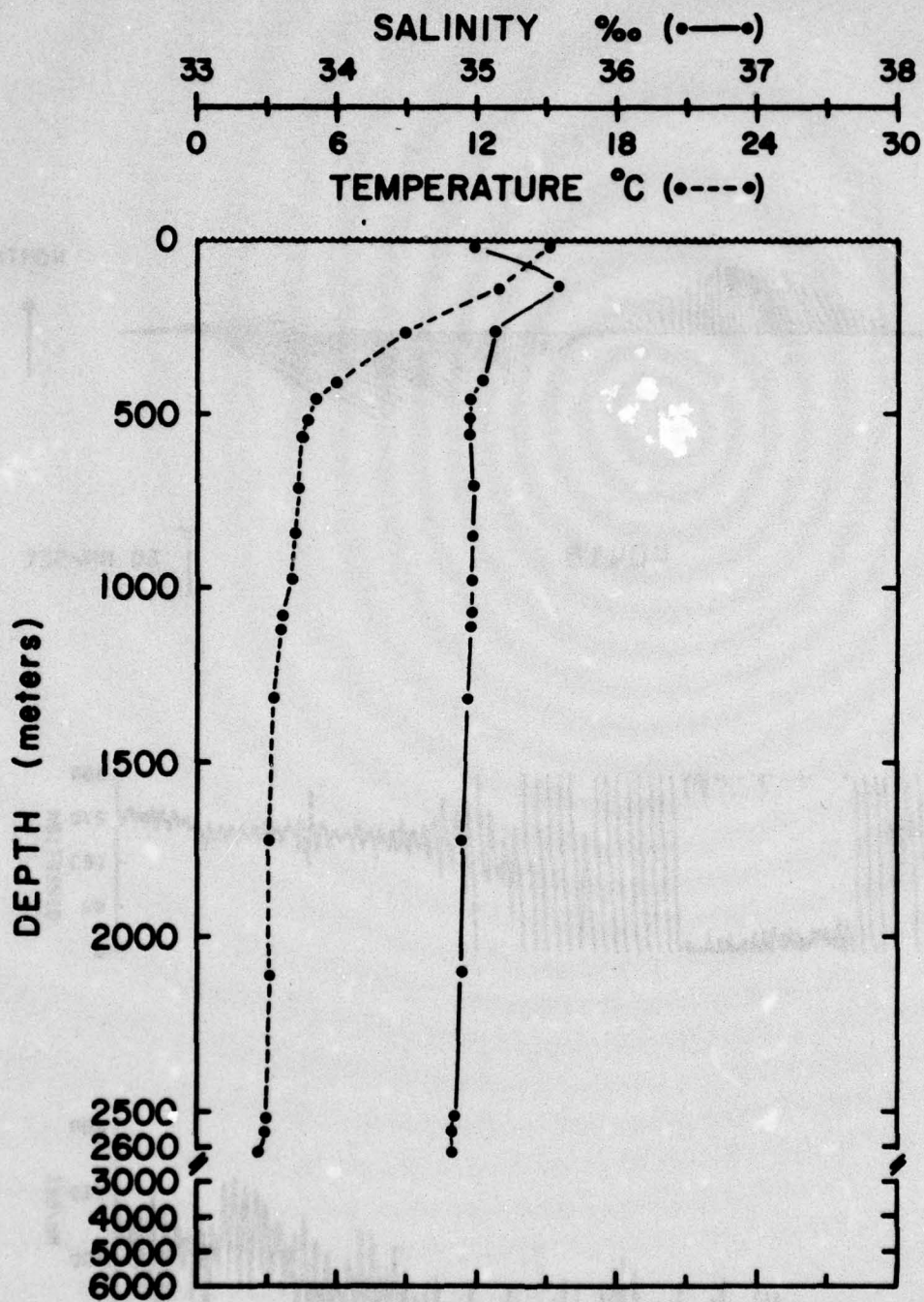
40418



16 21 26 31 05 FEB 10 15 20 25 01 MAR 06 11 16 21 26 31



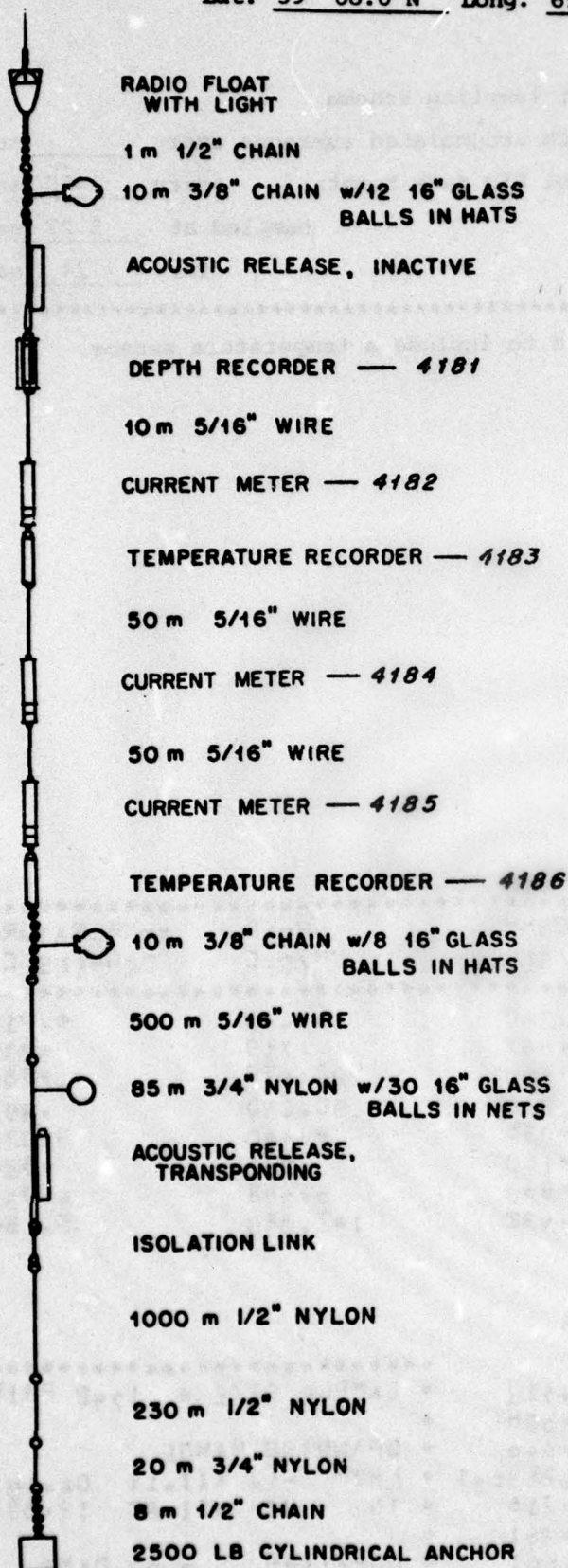
16 21 26 31 05 FEB 10 15 20 25 01 MAR 06 11 16 21 26 31



AN-066-1862
LAT. 39°08.0'N
LONG. 69°58.2'W
DATE 71-12-16

MOORING NO. 418

Lat. 39° 08.0'N Long. 69° 59.0'W



Set December 10, 1971

Set by J. Gifford

Ship R.V. Atlantis II Cruise 66

Recovered December 20, 1971

Recovered by J. Gifford

Ship R.V. Atlantis II Cruise 66

Mooring type - Intermediate

Purpose of mooring

Coherence experiment with mooring 419

<u>Data No.</u>	<u>Instr. Type</u>	<u>Depth (m)</u>
4181	Depth rec.	500
4182*	Model 850	512
4183	Temp	513
4184*	Model 850	565
4185*	Model 850	617
4186	Temp	618
Water depth		2669

Comments

DATA NUMBER 4182

Instrument no. M-175-T * Instrument sampling scheme
Inst. depth 512 * VACM accumulated averages every sec
Float depth 488 * X Model 850 data bursts every 450 sec
Water depth 2669 * sampled at 5.27 sec
* for 24 samples

COMMENTS - This instrument was modified to include a temperature sensor.

DATA/ 4182M450

VARIABLE * EAST COMP NORTH COMP SPEED TEMPERATURE
UNITS * MM/SEC MM/SEC MM/SEC DEGREES C.

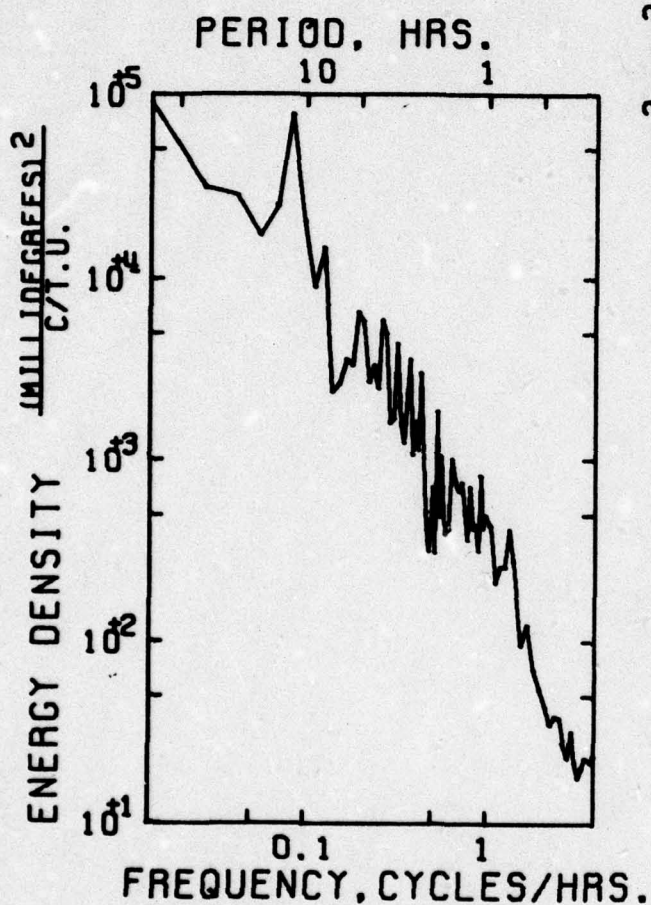
MEAN * -53.587 -18.580 64.469 5.212
STD. ERR. * .771 .669 .719 .235E-2
VARIANCE * 1064.263 802.460 927.179 .987E-2
STD. DEV. * 32.623 28.328 30.450 .994E-1
KURTOSIS * 2.429 3.035 2.440 3.034
SKEWNESS * -.231 .160 .230 .921E-2
MINIMUM * -146.302 -86.920 5.388 4.933
MAXIMUM * 16.787 82.432 147.080 5.456

EAST COMP & NORTH COMP

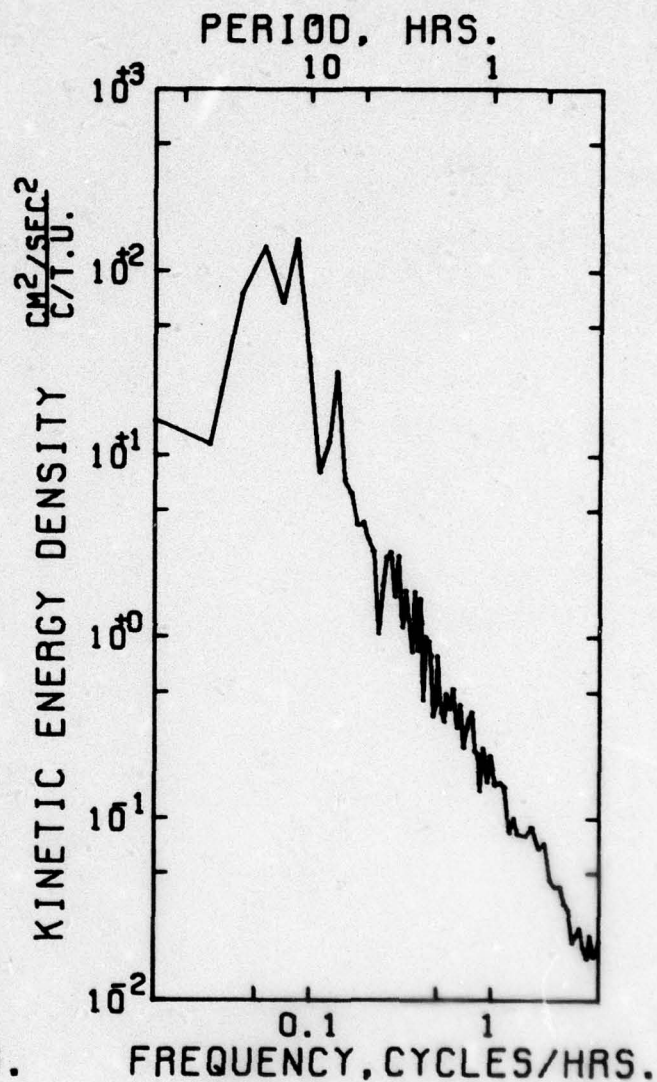
COVARIANCE *
STD. ERR. OF COVARIANCE *
STD. DEV. OF COVARIANCE *
CORRELATION COEFFICIENT *
VECTOR MEAN *
VECTOR VARIANCE *
VECTOR STD. DEV. *

-19.718
46.505
1968.646
-.213E-1
56.716
933.761
30.551

* SAMPLE SIZE = 1792 POINTS
*
* SPANNING RANGE
* FROM 71- XII.11 04.15.55
* TO 71- XII.20 12.08.25
*
* DURATION 9.33 DAYS



AUTO SPECTRUM
4182M450 TEMPERATURE
512 METERS
71-XII-11 TO 71-XII-20
1 PIECES WITH 864 ESTIMATES
PER PIECE. AVERAGED OVER
3 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4182M450 EAST COMP
4182M450 NORTH COMP
512 METERS
71-XII-11 TO 71-XII-20
1 PIECES WITH 864 ESTIMATES
PER PIECE. AVERAGED OVER
3 ADJACENT FREQUENCY BANDS

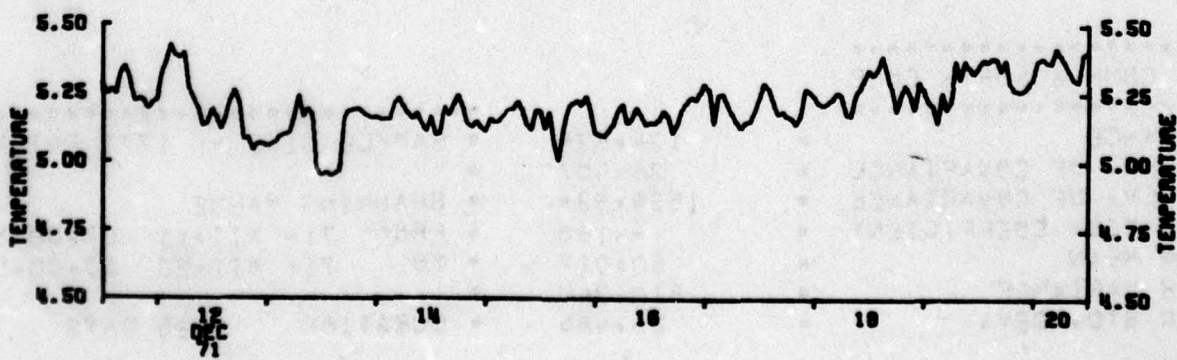
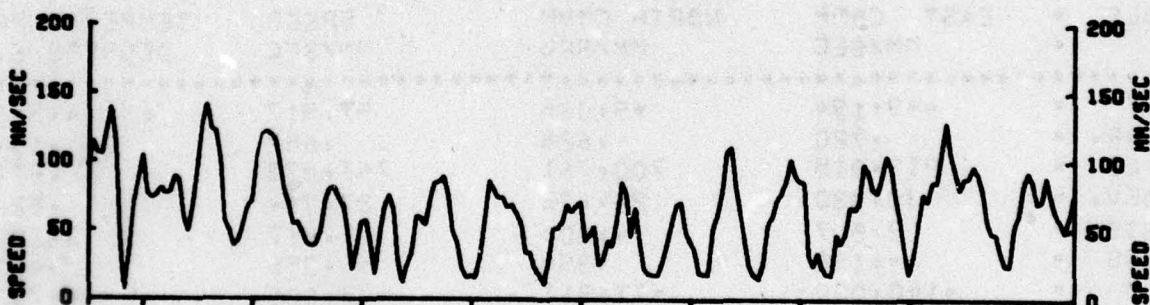
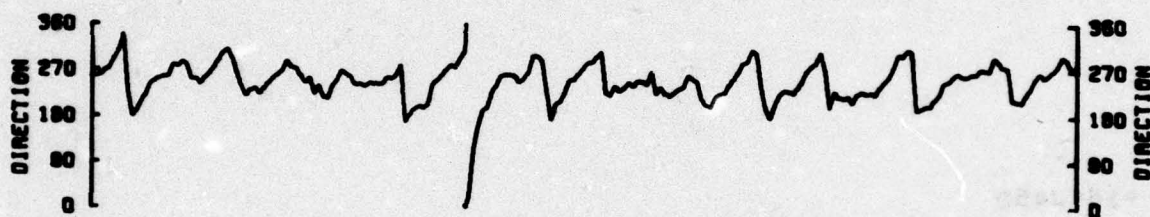
12 OCT 71 14 16 18 20

EAST



50 NM/SEC

4182M



DATA NUMBER 4184

Instrument no. M-127-T

Inst. depth 565

Float depth 488

Water depth 2669

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 450 sec

sampled at 5.27 sec

for 24 samples

COMMENTS - This instrument was modified to include a temperature sensor.

DATA/ 4184J450

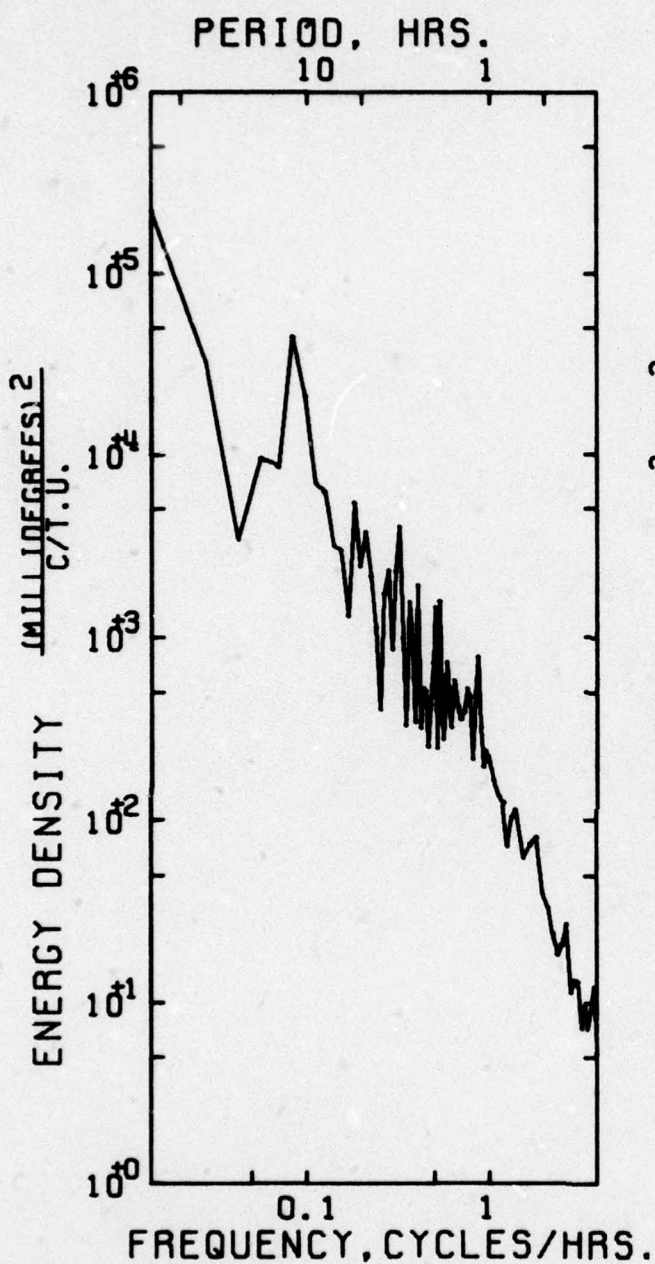
VARIABLE * EAST COMP NORTH COMP SPEED TEMPERATURE
UNITS * MM/SEC MM/SEC MM/SEC DEGREES C.

MEAN = -49.194 9.036 57.917 4.968
STD. ERR. = .720 .628 .657 .194E-2
VARIANCE = 919.919 700.761 768.073 .672E-2
STD. DEV. = 30.330 26.472 27.714 .820E-1
KURTOSIS = 2.517 4.006 2.417 3.199
SKEWNESS = -.196 .396 .256 .463
MINIMUM = -140.000 -77.911 6.000 4.793
MAXIMUM = 27.762 108.091 140.000 5.221

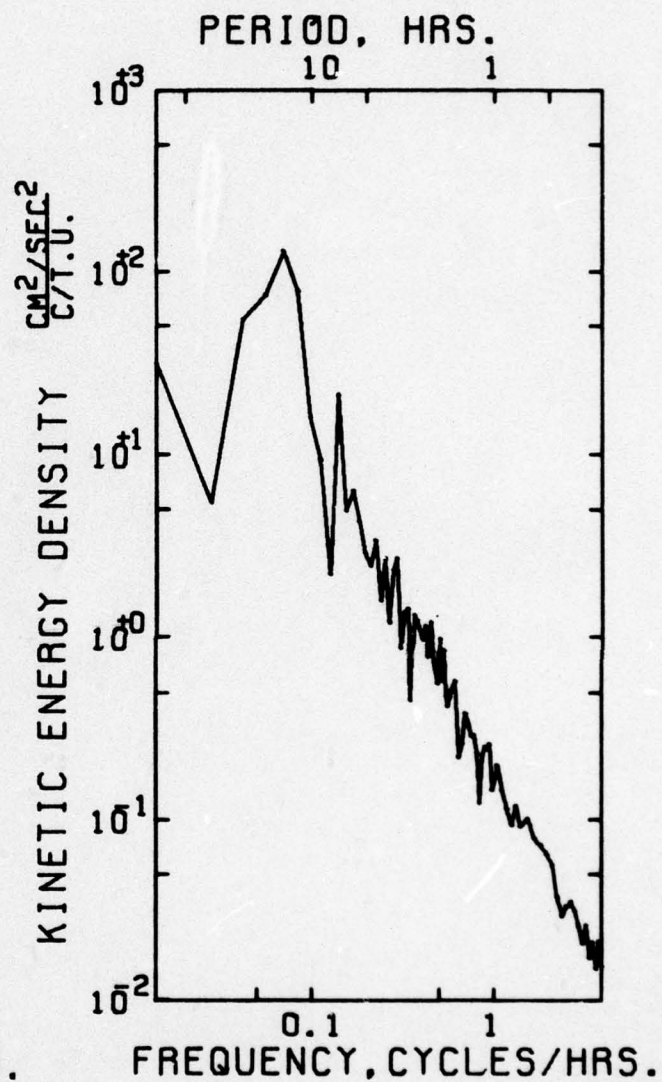
EAST COMP & NORTH COMP

COVARIANCE = -134.534
STD. ERR. OF COVARIANCE = 36.507
STD. DEV. OF COVARIANCE = 1538.934
CORRELATION COEFFICIENT = -.168
VECTOR MEAN = 50.017
VECTOR VARIANCE = 810.340
VECTOR STD. DEV. = 28.466

* SAMPLE SIZE = 1777 POINTS
*
* SPANNING RANGE
* FROM 71- XII-11 07.00.55
* TO 71- XII-20 13.00.55
*
* DURATION 9.25 DAYS



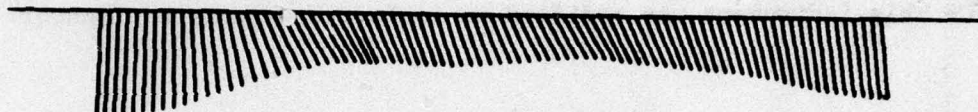
AUTO SPECTRUM
4184J450 TEMPERATURE
568 METERS
71-XII-11 TO 71-XII-20
1 PIECES WITH 864 ESTIMATES
PER PIECE. AVERAGED OVER
3 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4184J450 EAST COMP
4184J450 NORTH COMP
568 METERS
71-XII-11 TO 71-XII-20
1 PIECES WITH 864 ESTIMATES
PER PIECE. AVERAGED OVER
3 ADJACENT FREQUENCY BANDS

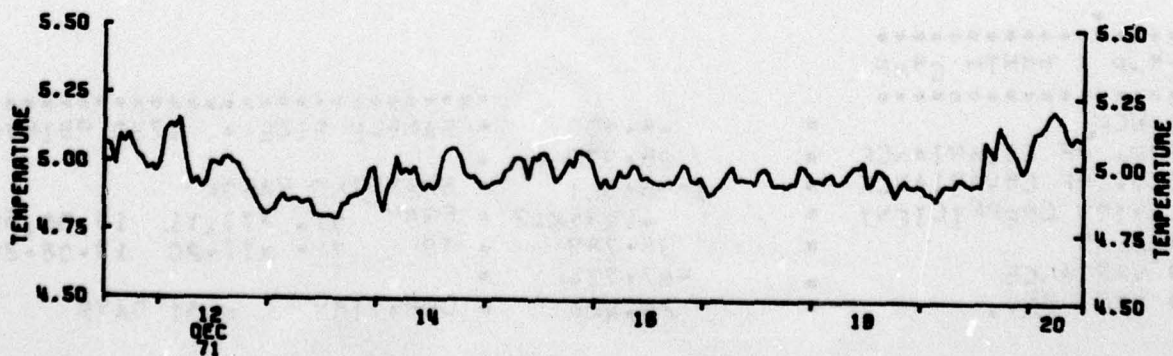
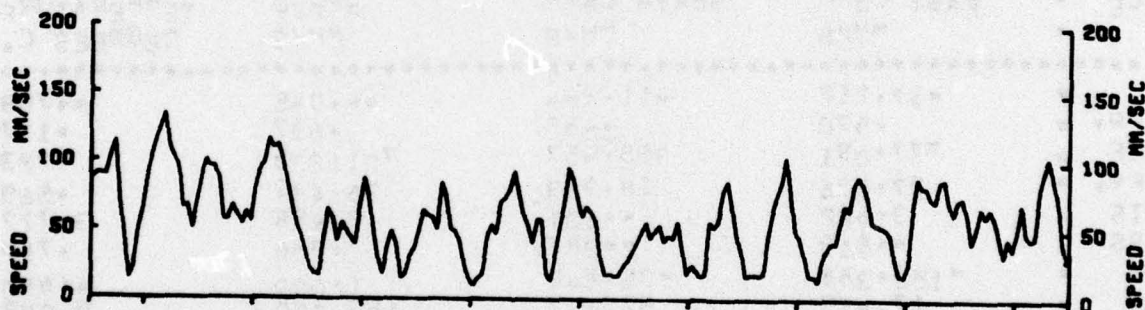
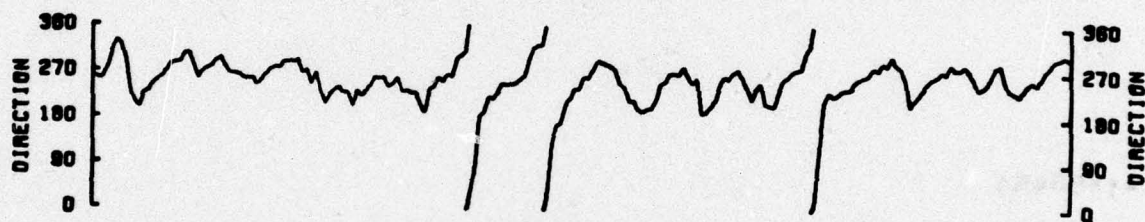
12 DEC 71 14 16 18 20

EAST



50 MM/SEC

4184J



DATA NUMBER 4185

Instrument no. M-206-T

Inst. depth 617

Float depth 488

Water depth 2669

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 450 sec

sampled at 5.27 sec

for 24 samples

COMMENTS - This instrument was modified to include a temperature sensor.

DATA/ 4185G450

VARIABLE * EAST COMP NORTH COMP SPEED TEMPERATURE
UNITS * MM/S MM/S MM/S DEGREES C.

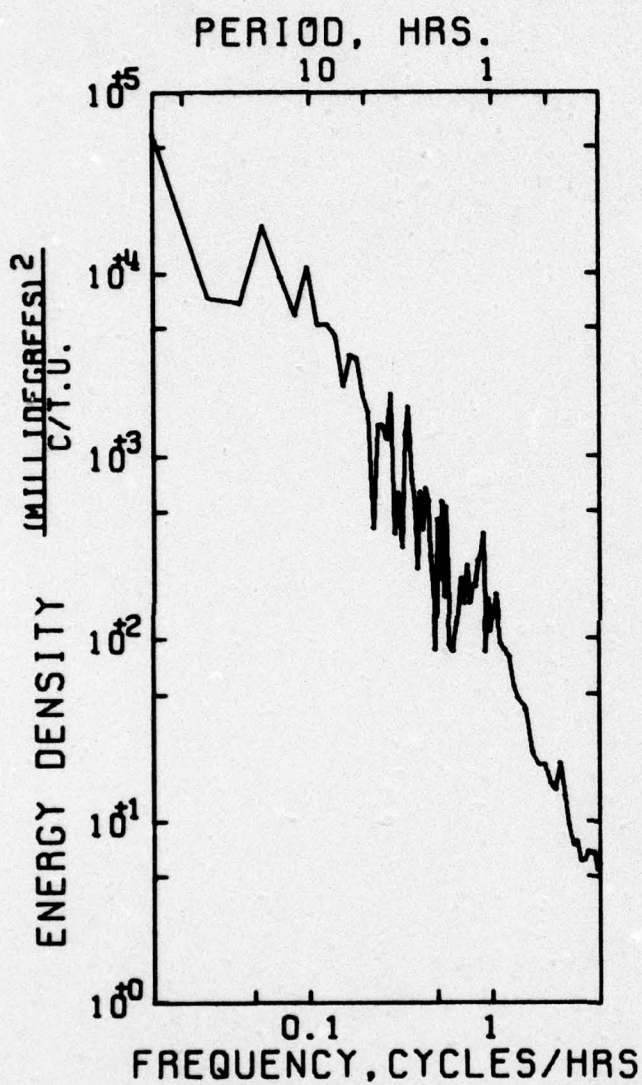
MEAN * -37.112 -11.284 44.045 4.759
STD. ERR. * .670 .455 .637 .137E-2
VARIANCE * 777.091 358.457 701.203 .323E-2
STD. DEV. * 27.876 18.933 26.480 .569E-1
KURTOSIS * 3.622 4.101 3.498 3.777
SKEWNESS * .813 .287 .906 .742
MINIMUM * -152.388 -75.548 1.000 4.650
MAXIMUM * 17.815 57.187 153.000 5.007

EAST COMP & NORTH COMP

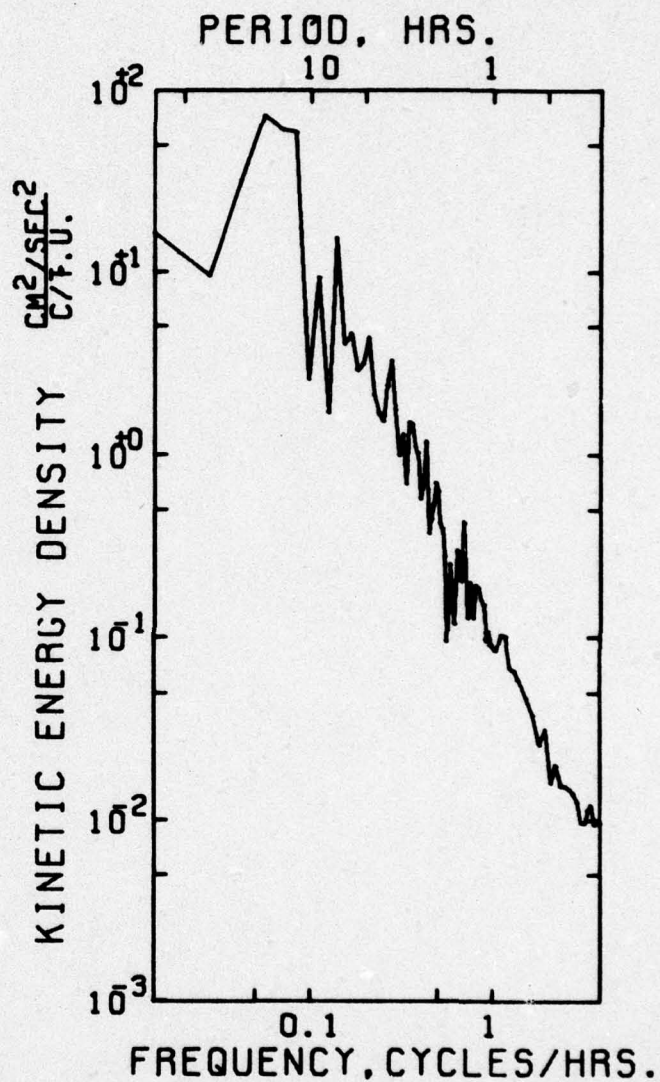
COVARIANCE * -4.400
STD. ERR. OF COVARIANCE * 25.379
STD. DEV. OF COVARIANCE * 1055.601
CORRELATION COEFFICIENT * -.834E-2
VECTOR MEAN * 38.789
VECTOR VARIANCE * 567.774
VECTOR STD. DEV. * 23.828

* SAMPLE SIZE = 1730 POINTS
*
* SPANNING RANGE
* FROM 71. XII.11 13.00.55
* TO 71. XII.20 13.08.25
*
* DURATION 9.01 DAYS

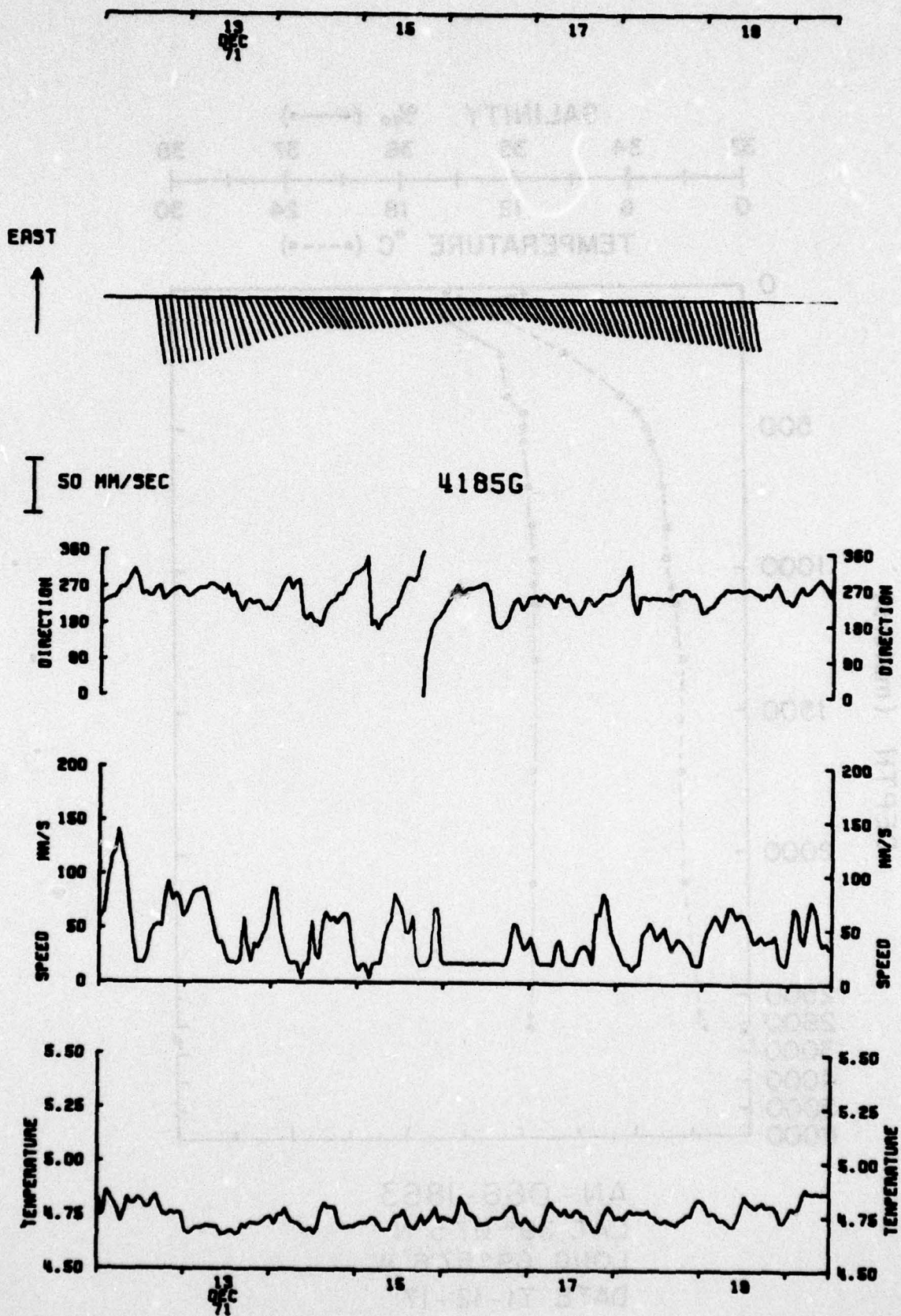
BEST AVAILABLE COPY

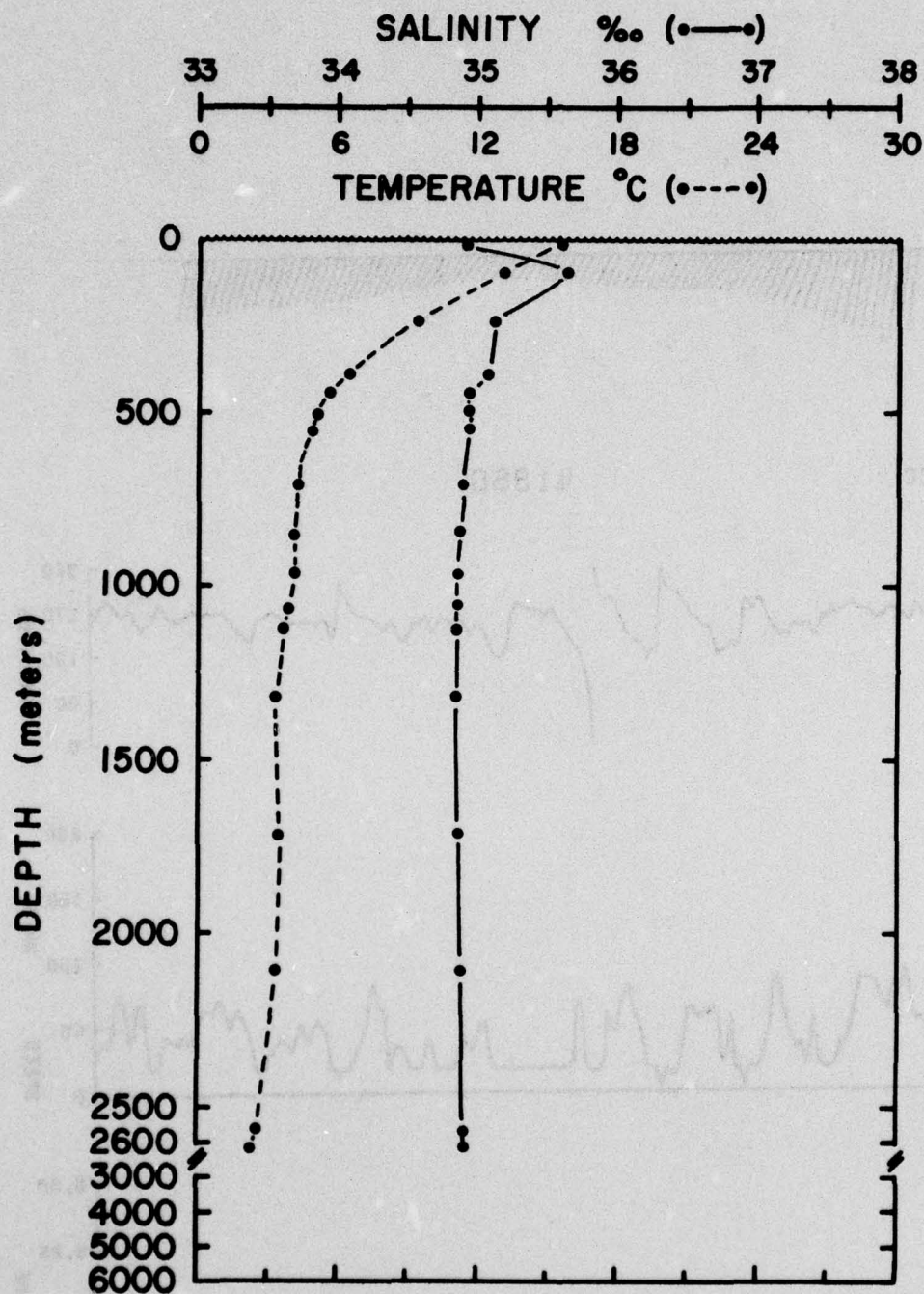


AUTO SPECTRUM
4185G450 TEMPERATURE
617 METERS
71-XII-11 TO 71-XII-20
1 PIECES WITH 864 ESTIMATES
PER PIECE. AVERAGED OVER
3 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4185G450 EAST COMP
4185G450 NORTH COMP
617 METERS
71-XII-11 TO 71-XII-20
1 PIECES WITH 864 ESTIMATES
PER PIECE. AVERAGED OVER
3 ADJACENT FREQUENCY BANDS





AN - 066 - 1863
LAT. 39° 07.5' N
LONG. 69° 57.6' W
DATE 71-12-17

MOORING NO. 419

Lat. 39° 08.4'N Long. 69° 59.0'W

Set December 11, 1971

Set by J. Gifford

Ship R.V. Atlantis II Cruise 66

Recovered December 20, 1971

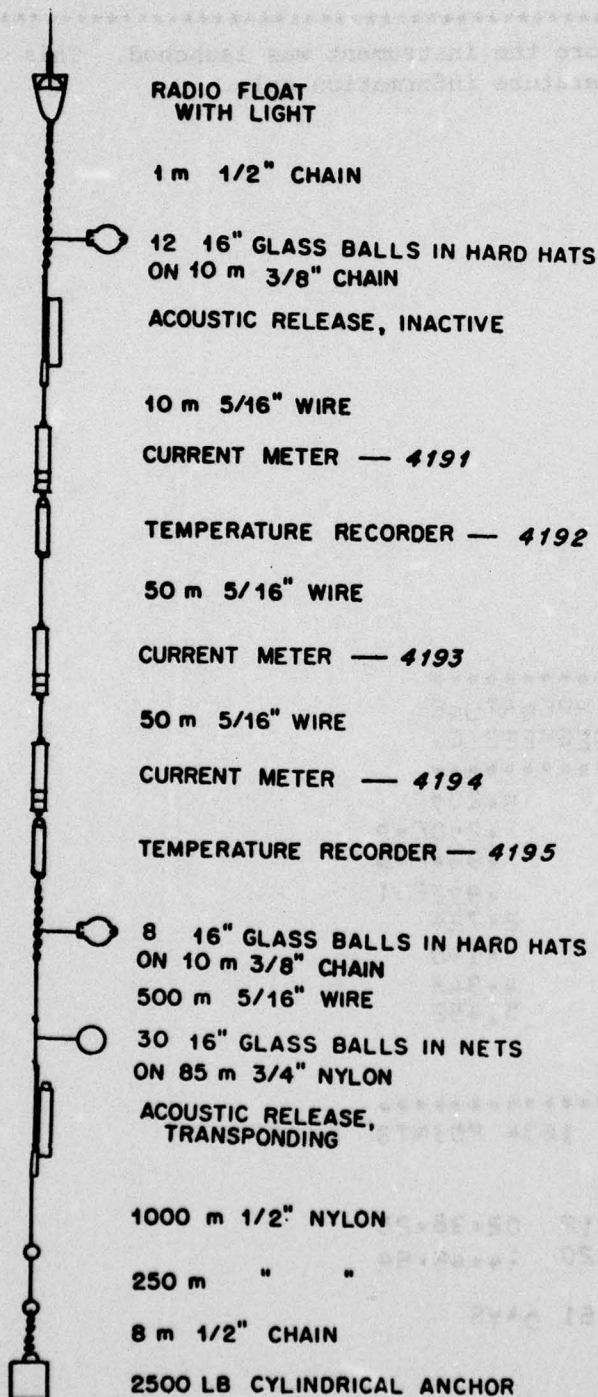
Recovered by J. Gifford

Ship R.V. Atlantis II Cruise 66

Mooring type - Subsurface

Purpose of mooring

Coherence experiment with mooring 418



Data No.	Instr. Type	Depth (m)
4191*	Model 850	489
4192	Temp	490
4193*	Model 850	542
4194	Model 850	594
4195	Temp	595
Water depth		2654

Comments

4194 Electronic problems

DATA NUMBER 4191

Instrument no. M-177-T

Inst. depth 489

Float depth 477

Water depth 2654

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 450 sec

sampled at 5.27 sec

for 24 samples

COMMENTS - The rotor sensor failed before the instrument was launched. This time series contains temperature information only.

DATA/ 4191B450

VARIABLE * TEMPERATURE

UNITS * DEGREES C.

MEAN * 5.207

STD. ERR. * .240E+2

VARIANCE * .944E+2

STD. DEV. * .972E+1

KURTOSIS * 2.724

SKEWNESS * .140

MINIMUM * 4.948

MAXIMUM * 5.452

* SAMPLE SIZE * 1634 POINTS

*

* SPANNING RANGE

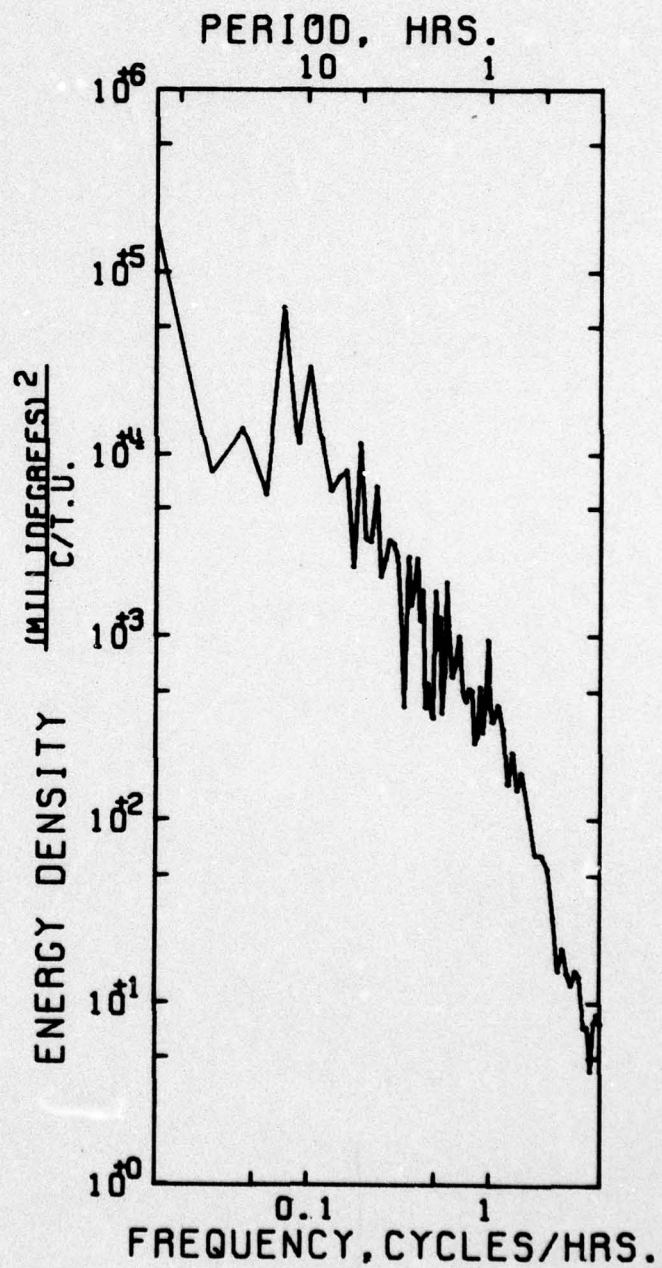
* FROM 71- XII-12 02.38.25

* TO 71- XII-20 14.45.55

*

* DURATION 8.51 DAYS

AUTO SPECTRUM
 41918450 TEMPERATURE
 489 METERS
 71-XII-12 TO 71-XII-20
 1 PIECES WITH 810 ESTIMATES
 PER PIECE. AVERAGED OVER
 3 ADJACENT FREQUENCY BANDS



The graph displays temperature data over a period of eight days. The vertical axis (y-axis) is labeled 'TEMPERATURE' and has major tick marks at 4.50, 4.75, 5.00, 5.25, and 5.50. The horizontal axis (x-axis) is labeled with dates: '12 DEC 71', '15', '17', and '19'. The temperature starts at approximately 5.40 on Dec 12, drops to about 5.10 by Dec 13, and then fluctuates between 5.00 and 5.30 through Dec 19.

Date	Temperature (approx.)
12 DEC 71	5.40
13 DEC 71	5.10
14 DEC 71	5.15
15 DEC 71	5.10
16 DEC 71	5.15
17 DEC 71	5.20
18 DEC 71	5.10
19 DEC 71	5.25

DATA NUMBER 4193

Instrument no. M-204-T

Instrument sampling scheme

Inst. depth 542

VACM accumulated averages every sec

Float depth 477

X Model 850 data bursts every 450 sec

Water depth 2654

sampled at 5.27 sec

for 24 samples

COMMENTS - This instrument was modified to include a temperature sensor.

Temperature data are good from December 13th.

DATA/ 4193J450

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

MEAN = 48.444 = 14.412 57.571
STD. ERR. = .710 .584 .616
VARIANCE 823.266 556.875 620.277
STD. DEV. 28.693 23.598 24.905
KURTOSIS 2.617 3.004 2.364
SKEWNESS = .405E+1 .237 .103
MINIMUM = 128.632 = 77.623 10.427
MAXIMUM = 35.519 70.600 131.216

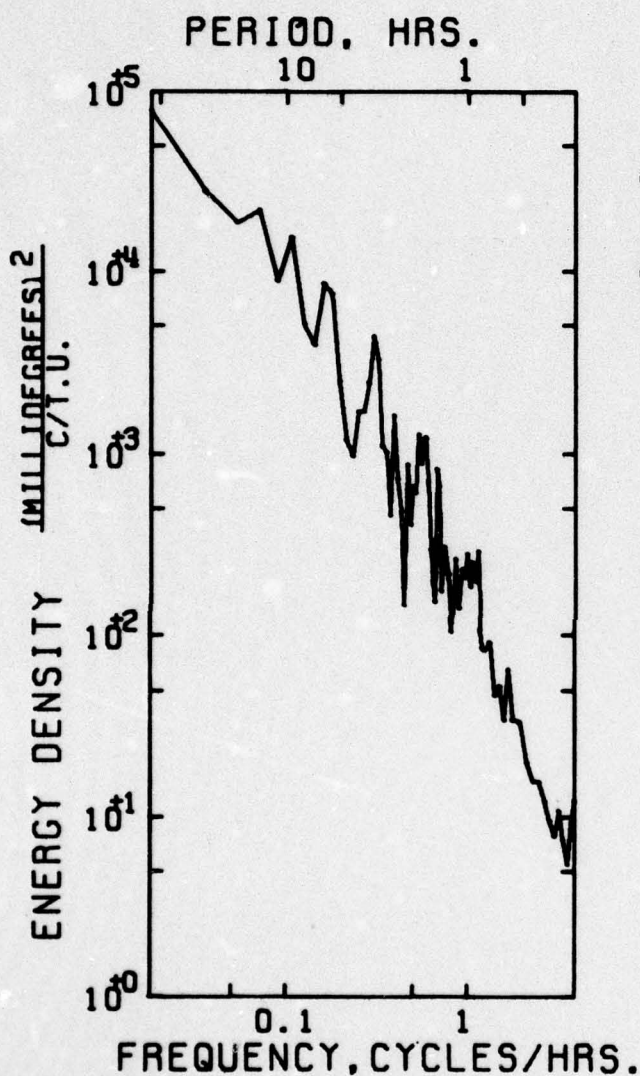
EAST & NORTH

COVARIANCE = -65.382 * SAMPLE SIZE = 1633 POINTS
STD. ERR. OF COVARIANCE = 31.539 *
STD. DEV. OF COVARIANCE 1274.487 * SPANNING RANGE
CORRELATION COEFFICIENT = .966E-1 * FROM 71- XII-12 02.45.55
VECTOR MEAN = 50.542 * TO 71- XII-20 14.45.55
VECTOR VARIANCE = 690.070 *
VECTOR STD. DEV. = 26.269 * DURATION 8.50 DAYS

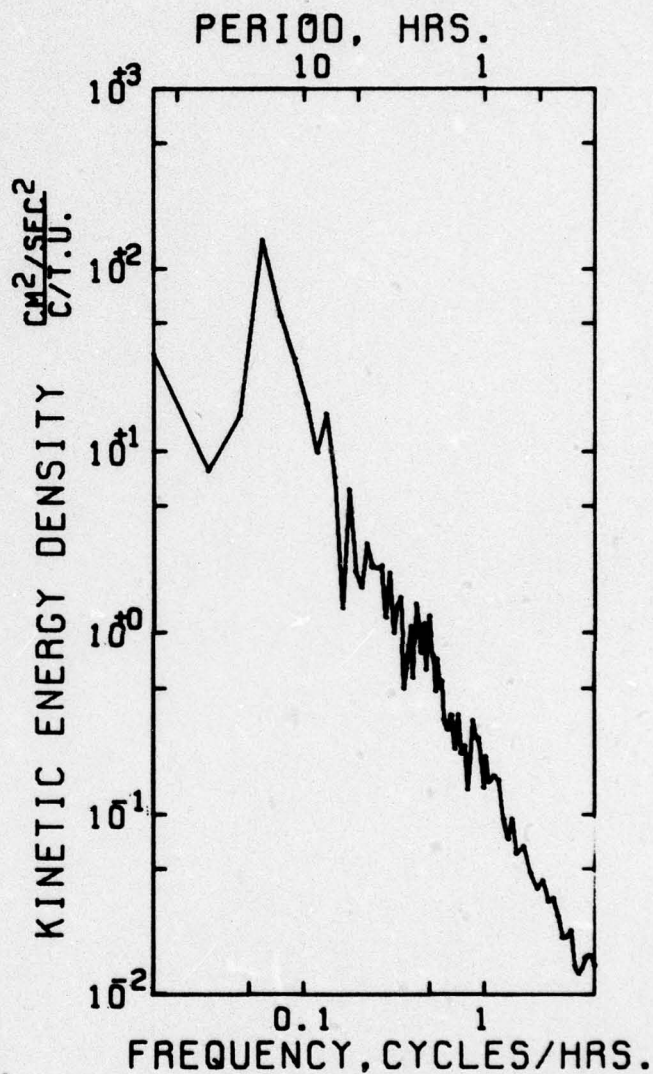
VARIABLE * TEMPERATURE
UNITS * DEGREES C.

MEAN = 4.942
STD. ERR. = .192E+2
VARIANCE = .506E+2
STD. DEV. = .712E+1
KURTOSIS = 3.303
SKEWNESS = .777
MINIMUM = 4.801
MAXIMUM = 5.186

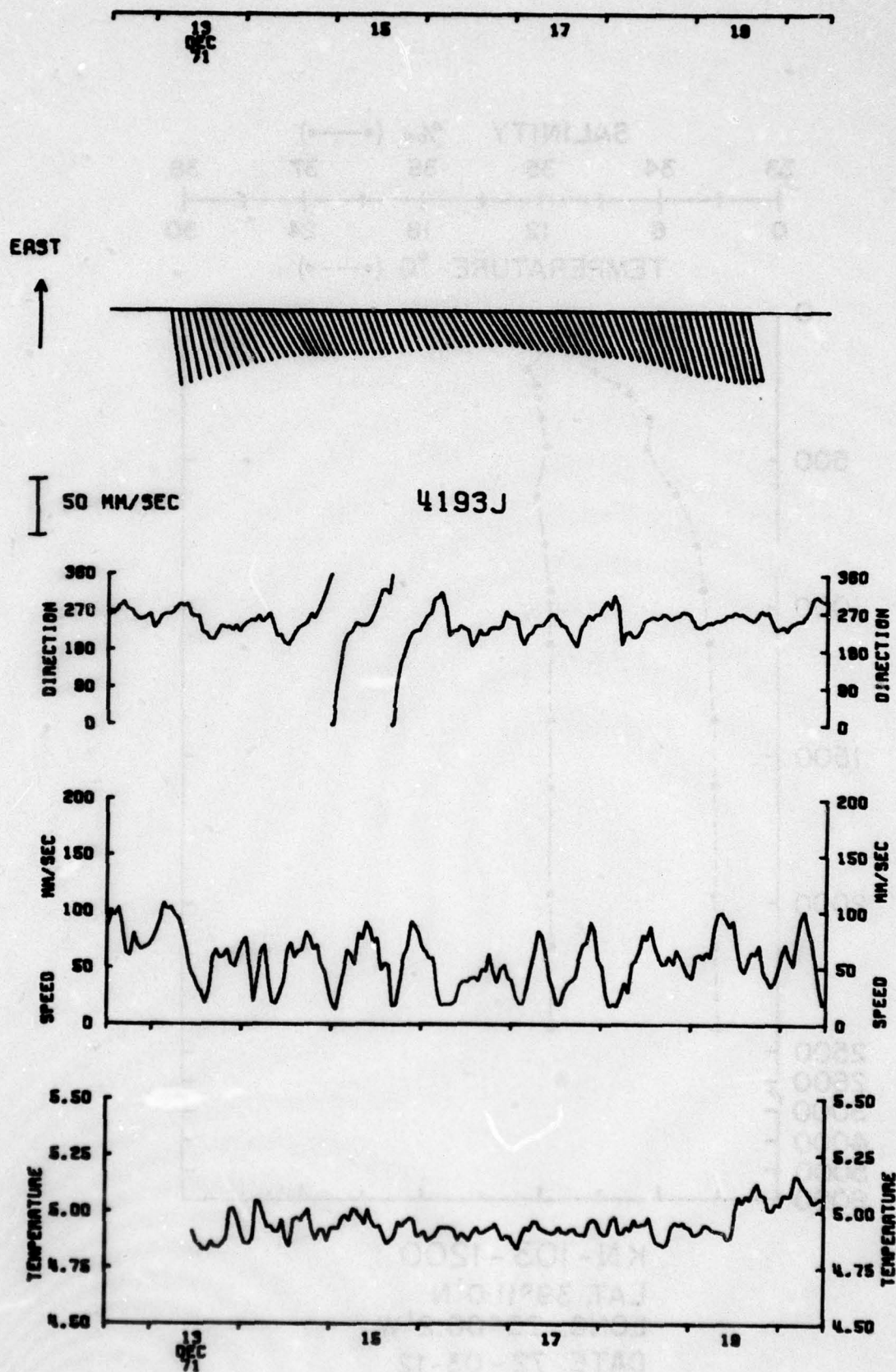
* SAMPLE SIZE = 1376 POINTS
*
* SPANNING RANGE
* FROM 71- XII-13 10.53.25
* TO 71- XII-20 14.45.55
*
* DURATION 7.16 DAYS



AUTO SPECTRUM
4193J450 TEMPERATURE
542 METERS
71-XII-13 TO 71-XII-20
1 PIECES WITH 675 ESTIMATES
PER PIECE. AVERAGED OVER
3 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4193J450 EAST COMP
4193J450 NORTH COMP
542 METERS
71-XII-12 TO 71-XII-20
1 PIECES WITH 810 ESTIMATES
PER PIECE. AVERAGED OVER
3 ADJACENT FREQUENCY BANDS



AD-A045 525

WOODS HOLE OCEANOGRAPHIC INSTITUTION MASS

F/G 8/3

A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)

SEP 77 S TARBELL, A W WHITLATCH

N00014-66-C-0241

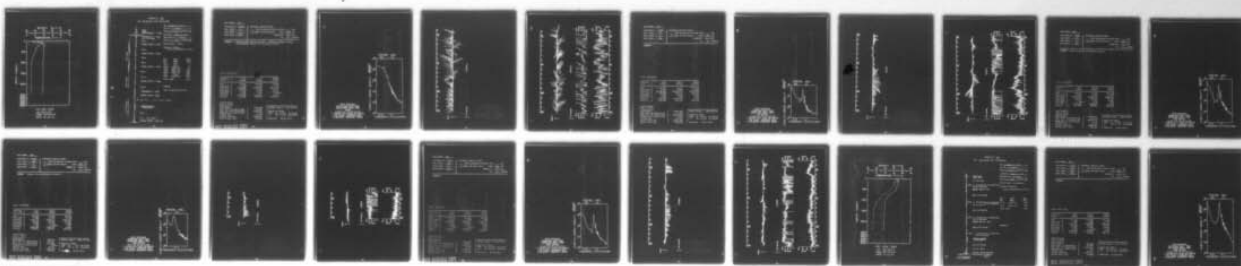
UNCLASSIFIED

WHOI-77-56

NL

3 OF 3

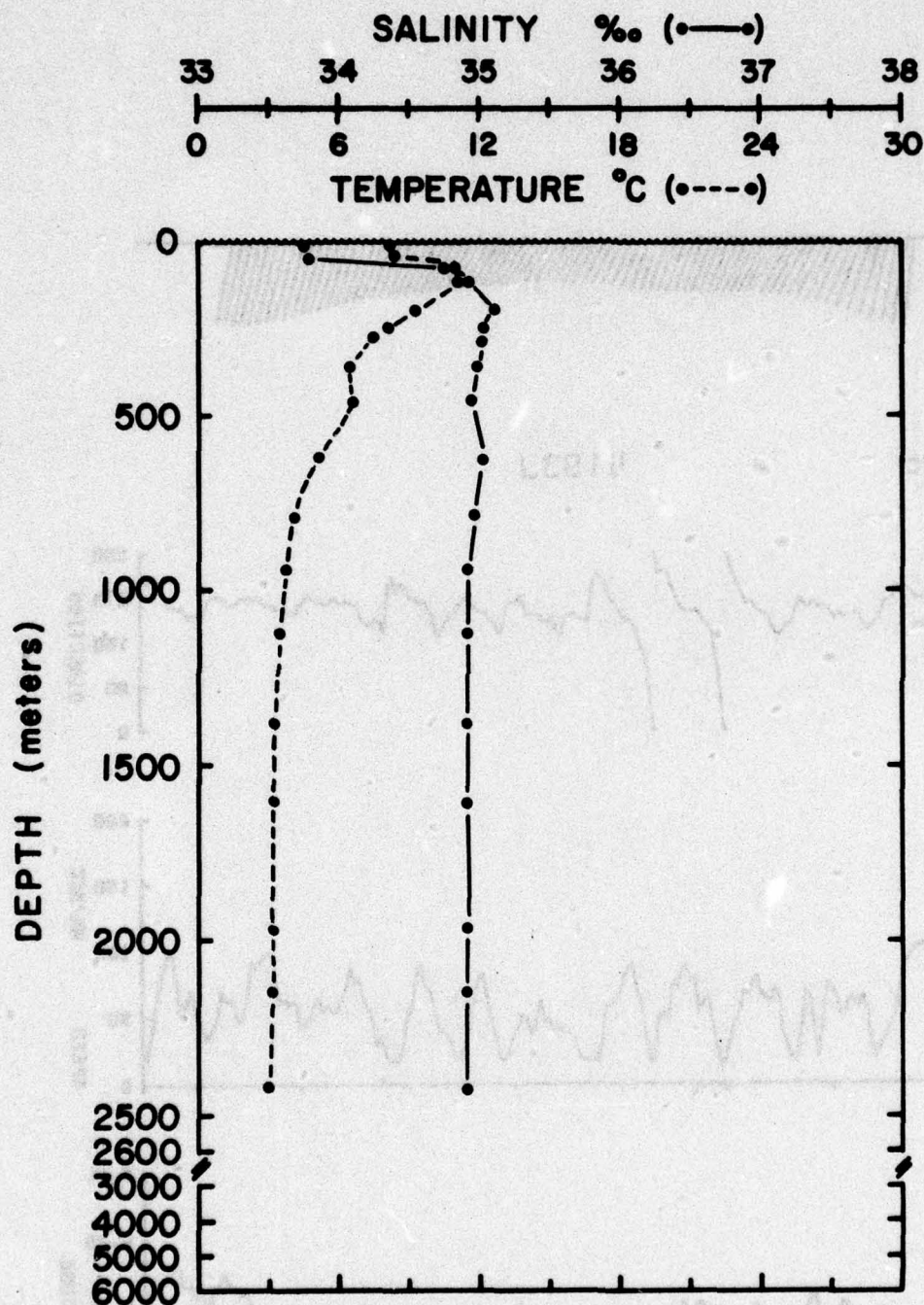
AD
A045525



END
DATE
FILMED

11 - 77

DDC



KN-103-1200
LAT. 39°11.0'N
LONG. 70°00.2'W
DATE 72-03-12

MOORING NO. 420

Lat. 39° 09.7'N Long. 69° 57.1'W

Set December 12, 1971

Set by J. Gifford

Ship R. V. Atlantis II Cruise 66

Recovered March 13, 1972

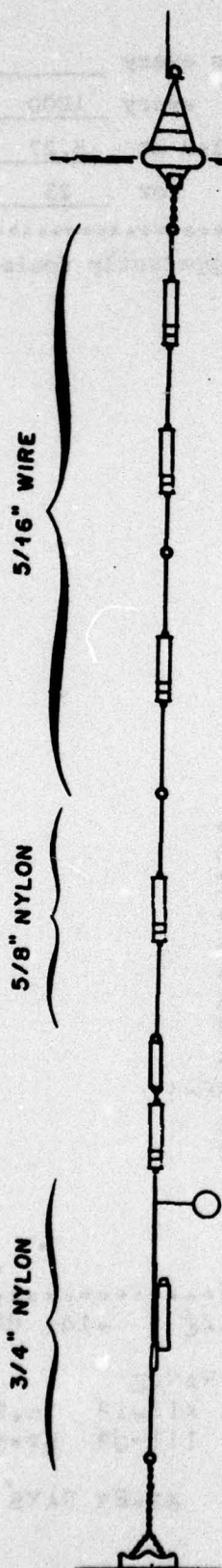
Recovered by D. Moller

Ship R. V. Chain Cruise 103

Mooring type - Surface

Purpose of mooring

Current measurements at Site D



LIGHT
RADIO
WIND RECORDER — 4201

TENSION CELL — 4202
10 m 1/2" CHAIN

40 m

CURRENT METER — 4203

150 m

CURRENT METER — 4204

300 m

500 m

CURRENT METER — 4205

500 m

511 m

CURRENT METER — 4206

424 m

TENSIOMETER — 4207

CURRENT METER — 4208

29 16" GLASS BALLS IN NETS ON 85 m

ACOUSTIC RELEASE,
TRANSPONDING

20 m

8 m 1/2" CHAIN

STIMSON ANCHOR, 4000 LBS

Data No.	Instr. Type	Depth (m)
4201*	Wind	-2
4202	Tens.	2
4203*	Model 850	54
4204*	Model 850	206
4205*	Model 850	1008
4206*	Model 850	2063
4207	Tens.	2525
4208	Model 850	2527
Water depth		2654

Comments

4208 Nonrecoverable data

DATA NUMBER 4201

Instrument no. W-143X

Inst. depth -2

Float depth -0-

Water depth 2654

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 23 samples

COMMENTS - A modified model 850 wind recorder. Something apparently fouled
the anemometer January 17th for about 20 hours.

DATA/ 4201WJ1800

VARIABLE * EAST NORTH SPEED
UNITS * DM/SEC DM/SEC CM/SEC

MEAN * 36.895 -16.383 98.588
STD. ERR. * 1.059 1.100 .634
VARIANCE * 4700.922 5075.544 1686.475
STD. DEV. * 68.563 71.243 41.067
KURTOSIS * 2.968 2.121 2.516
SKEWNESS * -.509 .237 -.528E-1
MINIMUM * -197.835 -183.554 1.000
MAXIMUM * 195.000 162.215 214.000

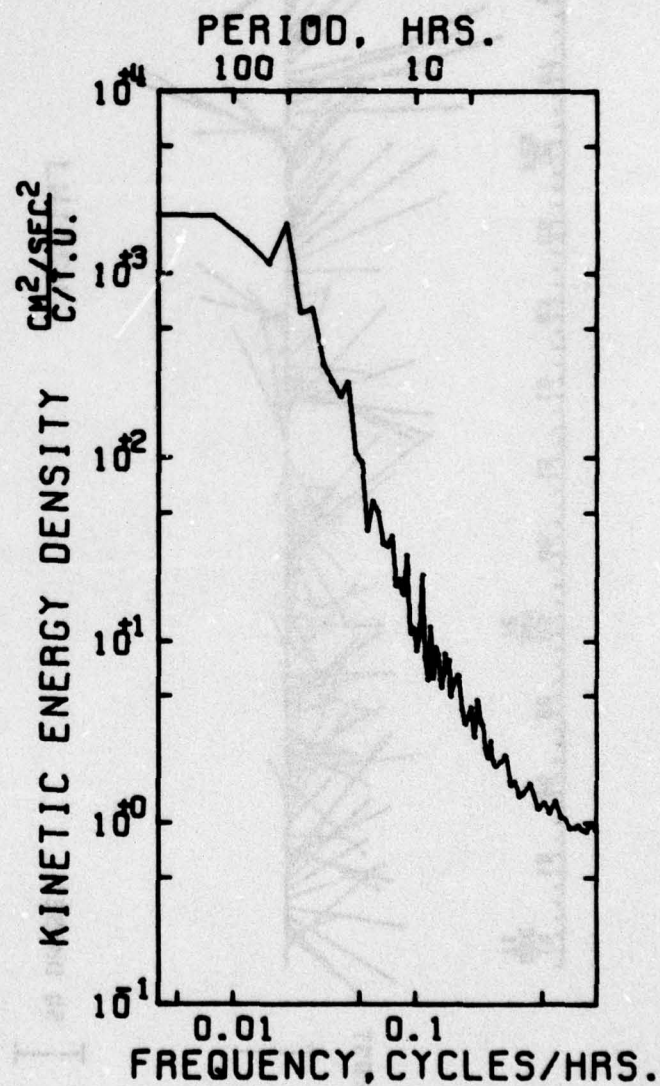
EAST & NORTH

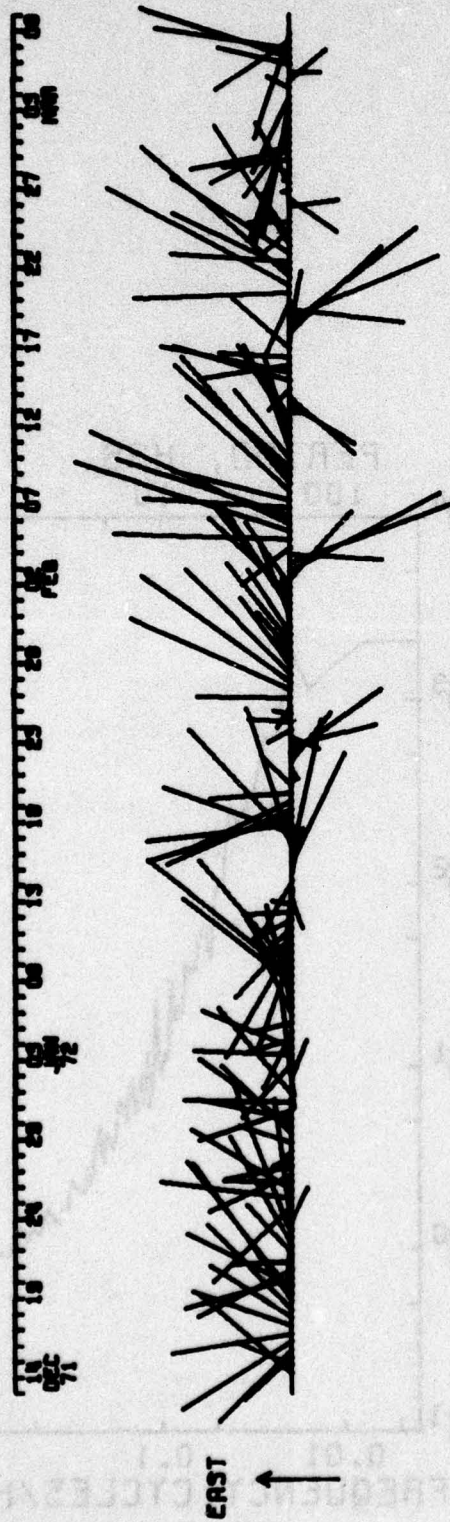
COVARIANCE * -670.689
STD. ERR. OF COVARIANCE * 82.003
STD. DEV. OF COVARIANCE * 5308.713
CORRELATION COEFFICIENT * -.137
VECTOR MEAN * 40.369
VECTOR VARIANCE * 4888.233
VECTOR STD. DEV. * 69.916

* SAMPLE SIZE * 4191 POINTS
*
* SPANNING RANGE
* FROM 71- XII-12 19.00.58
* TO 72- III-09 02.00.58
*
* DURATION 87.23 DAYS

BEST AVAILABLE COPY

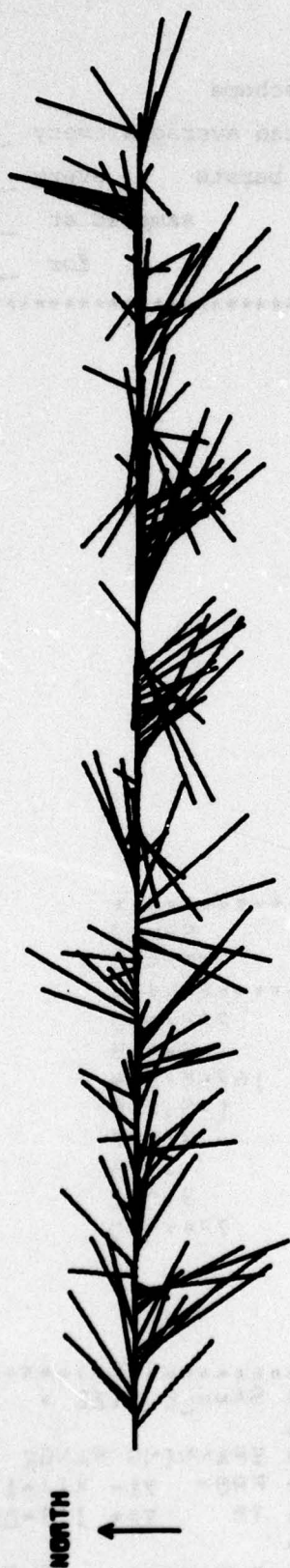
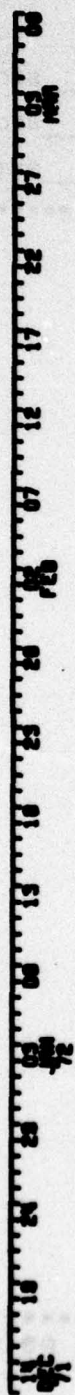
AUTO SPECTRUM
 4201WJ1800 EAST COMP
 4201WJ1800 NORTH COMP
 WIND
 71-XII-12 TO 72-III-07
 1 PIECES WITH 2048 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





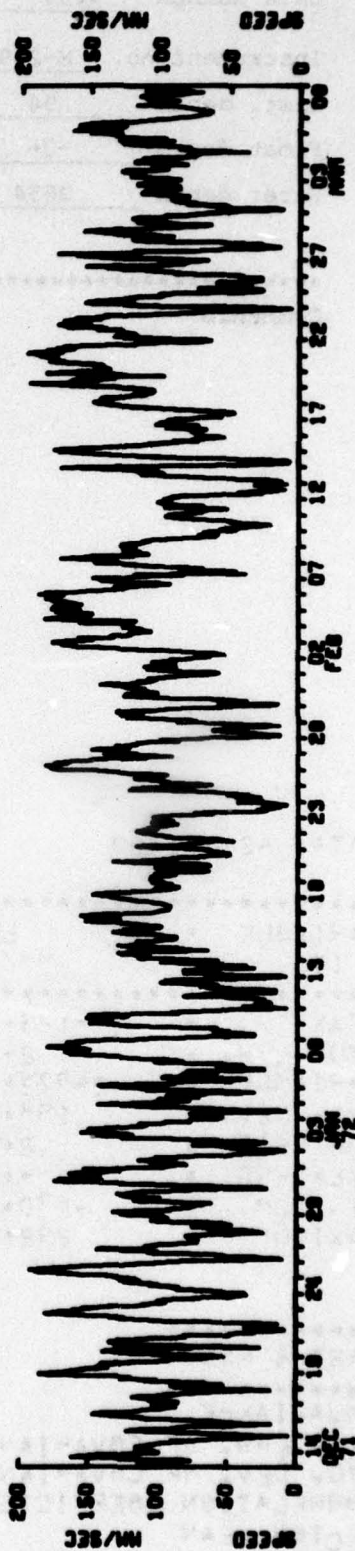
4201WJ
50 CM/SEC

WIND
71-K11-12 TO 75-111-07
1-PIECES WITH 5000 ESTIMATES
PER PIECE. AVERAGED OVER
2-ADJACENT FREQUENCY BANDS



4201WJ

50 DM/SEC



DATA NUMBER 4203

Instrument no. M-249

Inst. depth 54

Float depth -0-

Water depth 2654

Instrument sampling scheme

 VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 23 samples

COMMENTS

DATA/ 4203C1800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      -123.378      11.174      222.000
STD. ERR. =      2.500      2.538      2.049
VARIANCE  =      24972.806      25733.189      16768.884
STD. DEV. =      158.028      160.416      129.495
KURTOSIS  =      2.591      3.178      3.247
SKEWNESS  =      -.210      .122      .775
MINIMUM   =      -670.745      -464.645      3.000
MAXIMUM   =      292.796      591.160      784.000
```

EAST & NORTH

COVARIANCE

STD. ERR. OF COVARIANCE

STD. DEV. OF COVARIANCE

CORRELATION COEFFICIENT

VECTOR MEAN

VECTOR VARIANCE

VECTOR STD. DEV.

```
*      -4694.322
*      417.203
*      39010.963
*      -.185
*      123.883
*      25352.998
*      159.226
```

* SAMPLE SIZE = 3995 POINTS

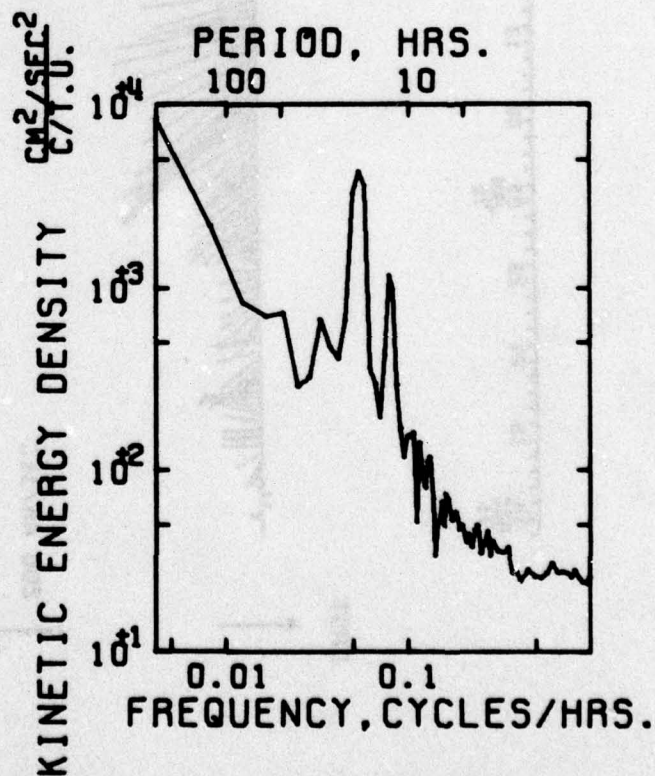
* SPANNING RANGE

* FROM 71- XII-1> 21.30.58

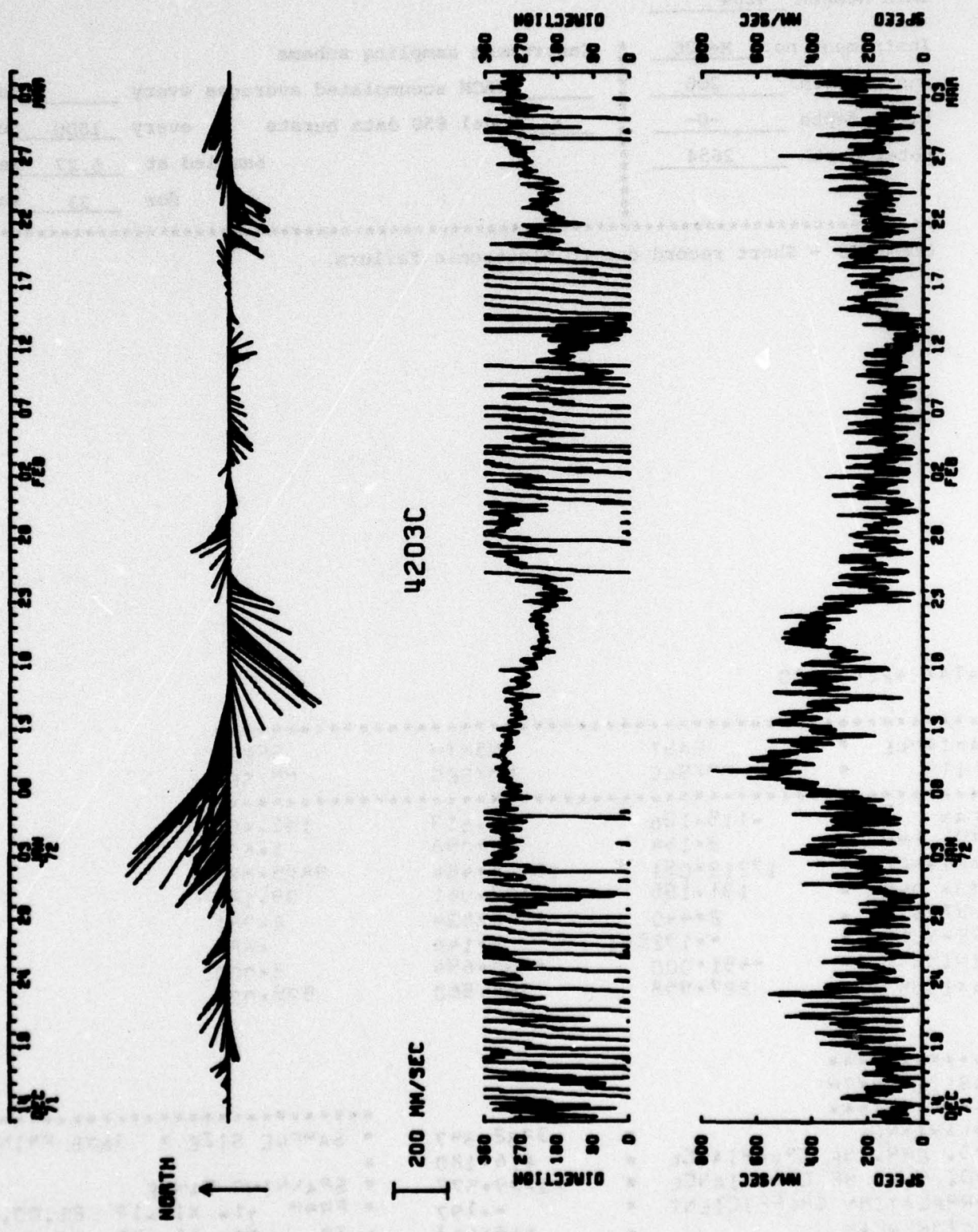
* TO 72- III-05 02.30.58

* DURATION 83.21 DAYS

AUTO SPECTRUM
 4203C1800 EAST COMP
 4203C1800 NORTH COMP
 54 METERS
 71-XII-12 TO 72-III-02
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-5415
-5418
-5421



DATA NUMBER 4204

Instrument no.	<u>M-226</u>	** Instrument sampling scheme
Inst. depth	<u>206</u>	** VACM accumulated averages every <u> </u> sec
Float depth	<u>-0-</u>	** <u>X</u> Model 850 data bursts every <u>1800</u> sec
Water depth	<u>2654</u>	** sampled at <u>5.27</u> sec
		** for <u>23</u> samples

COMMENTS - Short record due to electronic failure.

DATA/ 4204H1800

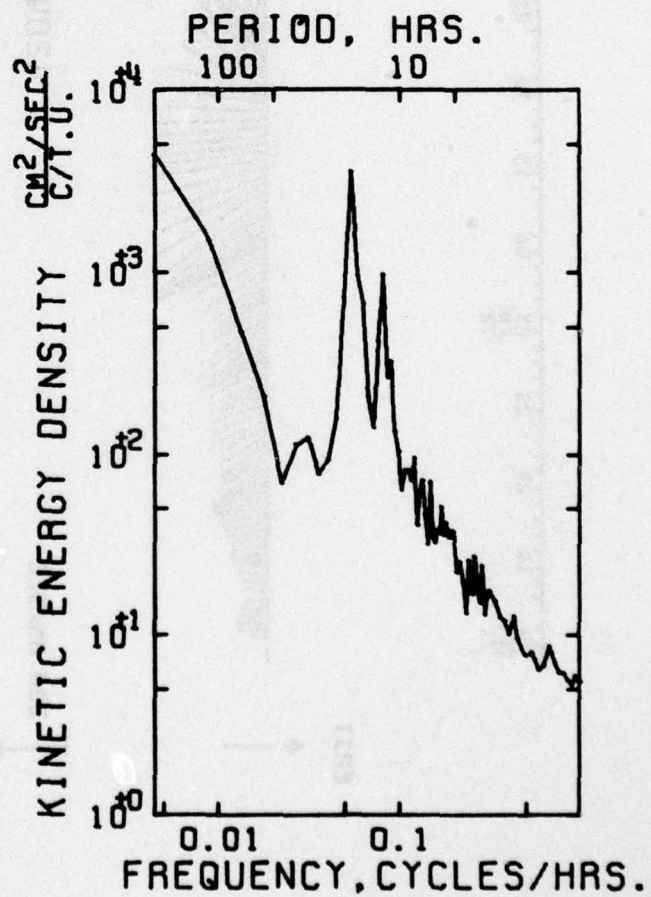
VARIABLE	*	EAST	NORTH	SPEED
UNITS	*	MM/SEC	MM/SEC	MM/SEC
MEAN	=	-115.136	1.613	191.208
STD. ERR.	=	2.164	2.096	1.635
VARIANCE	=	17212.091	16144.484	9225.071
STD. DEV.	=	131.195	127.061	99.121
KURTOSIS	=	2.440	2.834	2.981
SKEWNESS	=	-.192E-1	-.146	.685
MINIMUM	=	-451.000	-430.694	2.000
MAXIMUM	=	227.958	364.860	529.000

EAST & NORTH

COVARIANCE	=	-3282.847
STD. ERR. OF COVARIANCE	=	416.180
STD. DEV. OF COVARIANCE	=	25229.577
CORRELATION COEFFICIENT	=	-.197
VECTOR MEAN	=	115.147
VECTOR VARIANCE	=	16478.287
VECTOR STD. DEV.	=	129.144

* SAMPLE SIZE = 3675 PRINTS
*
* SPANNING RANGE
* FROM 71- XII-12 21.00.58
* TO 72- II -27 10.00.58
*
* DURATION 76.54 DAYS

AUTO SPECTRUM
 420481800 EAST COMP
 420481800 NORTH COMP
 206 METERS
 71-XII-12 TO 72-II-25
 1 PIECES WITH 1800 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

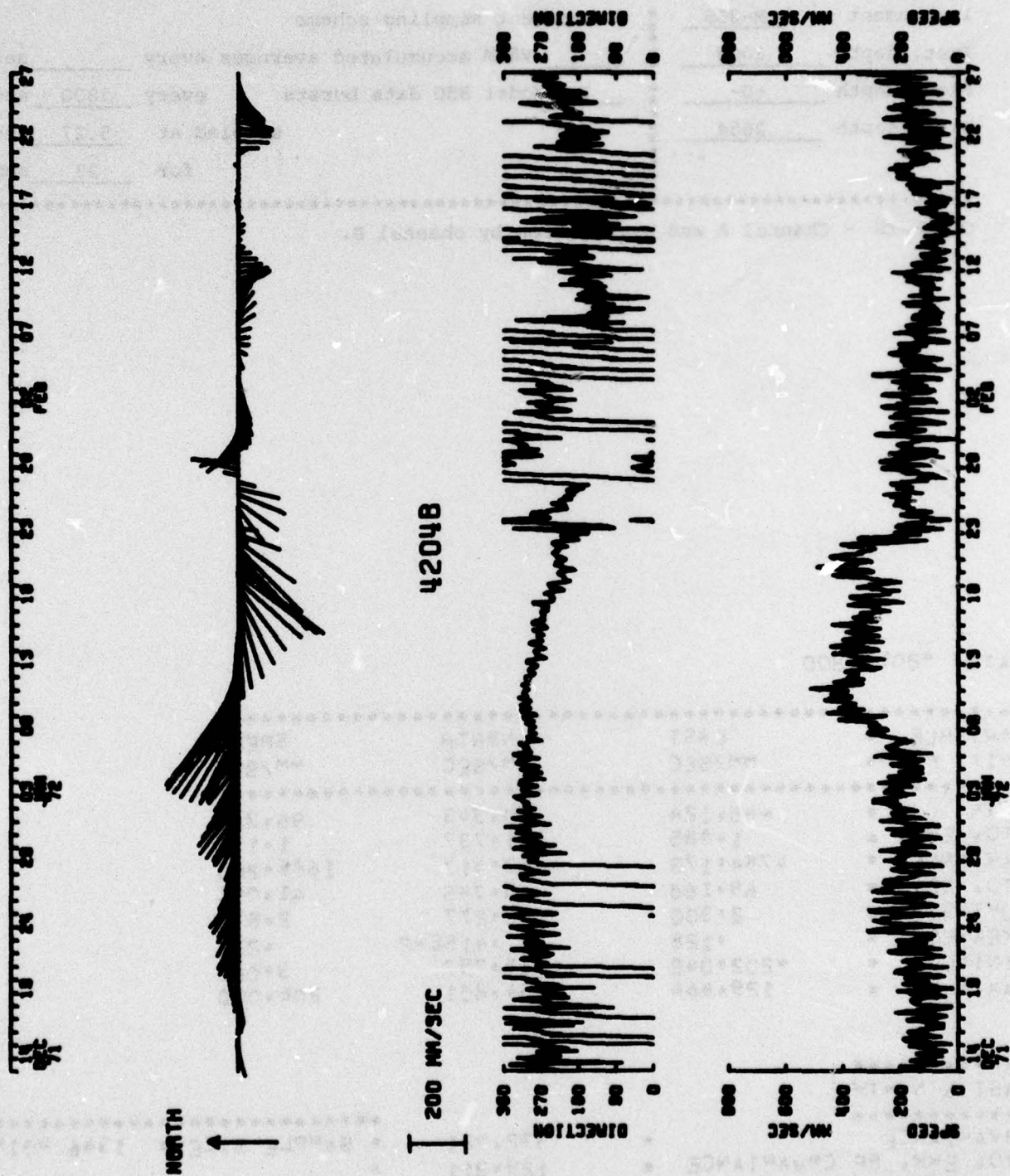
EAST



4204B

200 NM/SEC

8 ROTARY FREQUENCY BANDS
PER PIECE, AVERAGED OVER
1 PIECES WITH 1000 ESTIMATES
71-K11-15 TO 75-11-75
200 METERS
WSONE:100 NORTH CORN
WSONE:100 EAST CORN
RHTD SPECTRUM



DATA NUMBER 4205

Instrument no. M-266

Inst. depth 1008

Float depth -0-

Water depth 2654

Instrument sampling scheme

VACH accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 23 samples

COMMENTS - Channel A was overwritten by channel B.

DATA/ 4205B1800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

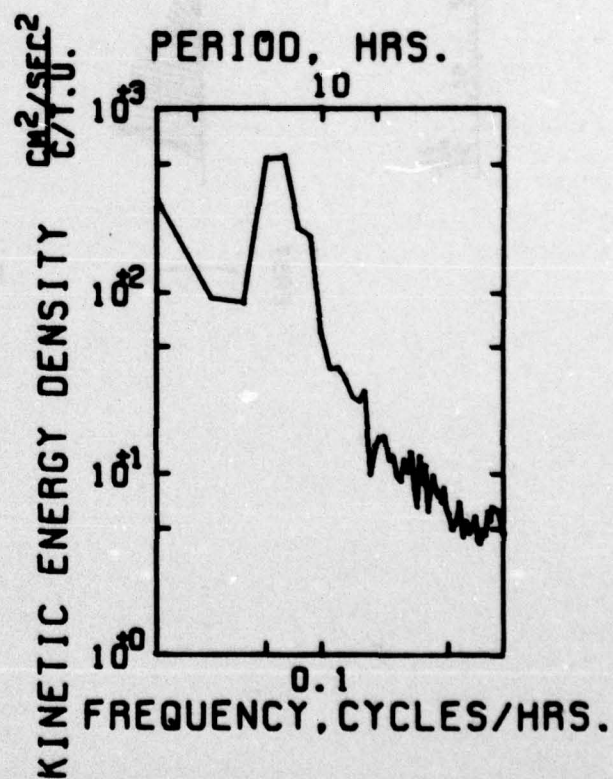
MEAN * -45.124 -9.343 96.363
STD. ERR. * 1.885 1.737 1.119
VARIANCE * 4784.173 4063.417 1685.200
STD. DEV. * 69.168 63.745 41.051
KURTOSIS * 2.300 2.277 2.573
SKEWNESS * .128 .415E-2 .227
MINIMUM * -202.042 -168.797 3.000
MAXIMUM * 129.464 164.801 206.000

EAST & NORTH

COVARIANCE * 332.721
STD. ERR. OF COVARIANCE * 129.311
STD. DEV. OF COVARIANCE * 4744.156
CORRELATION COEFFICIENT * .755E-1
VECTOR MEAN * 46.081
VECTOR VARIANCE * 4423.795
VECTOR STD. DEV. * 66.512

* SAMPLE SIZE * 1346 POINTS
*
* SPANNING RANGE
* FROM 72- I -13 22.30.58
* TO 72- II -10 23.00.58
*
* DURATION 28.02 DAYS

AUTO SPECTRUM
 420581800 EAST COMP
 420581800 NORTH COMP
 1000 METERS
 72-1-13 TO 72-11-08
 1 PIECES WITH 648 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





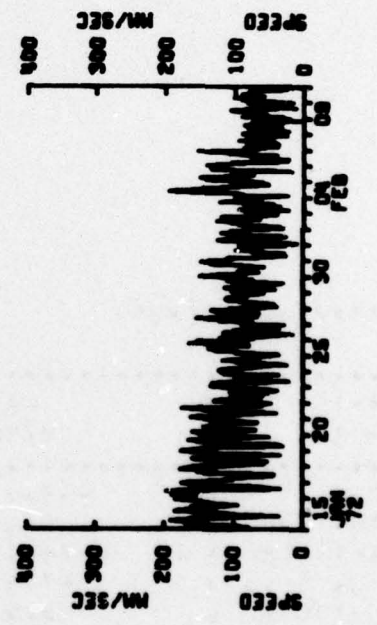
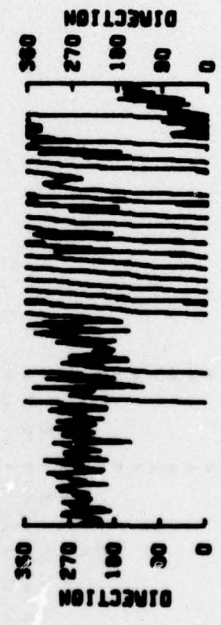
EAST



100 MM/SEC 42058



100 NM/SEC 4205B



DATA NUMBER 4206

Instrument no. M-142

Inst. depth 2063

Float depth -0-

Water depth 2654

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 24 samples

COMMENTS

DATA/ 4206-1800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -52.703    -6.226    96.088
STD. ERR. *      1.016      .898      .623
VARIANCE  *      4575.385    3556.272    1715.097
STD. DEV. *      67.642    59.634    41.414
KURTOSIS  *      2.354      2.290    2.776
SKEWNESS  *      .343E-1    .573E-1    .396
MINIMUM   *      -236.000    -168.796    4.000
MAXIMUM   *      121.000    160.055    236.000
*****
```

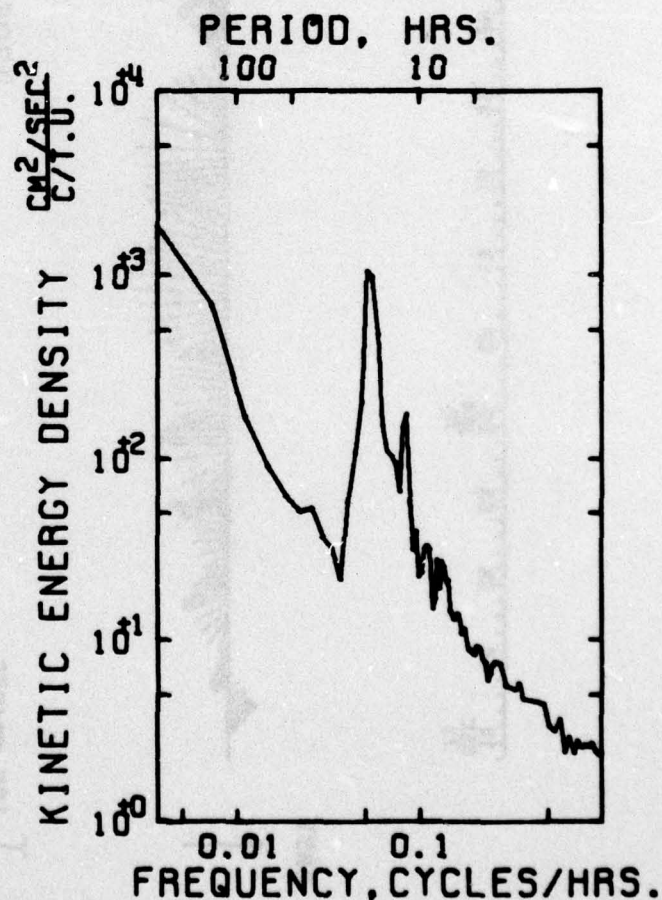
EAST & NORTH

```
*****
COVARIANCE *      -846.604
STD. ERR. OF COVARIANCE *      66.170
STD. DEV. OF COVARIANCE *      4495.703
CORRELATION COEFFICIENT *      -.136
VECTOR MEAN *      53.069
VECTOR VARIANCE *      4265.428
VECTOR STD. DEV. *      63.764
*****
```

```
*****
* SAMPLE SIZE * 4413 PRINTS
*
* SPANNING RANGE
* FROM 71- XII-12 21.00.58
* TO 72- III-13 19.00.58
*
* DURATION 91.92 DAYS
*****
```

BEST AVAILABLE COPY

AUTO SPECTRUM
 420681800 EAST COMP
 420681800 NORTH COMP
 2063 METERS
 71-XII-12 TO 72-III-12
 1 PIECES WITH 2187 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





↑

4206B

100 MM/SEC

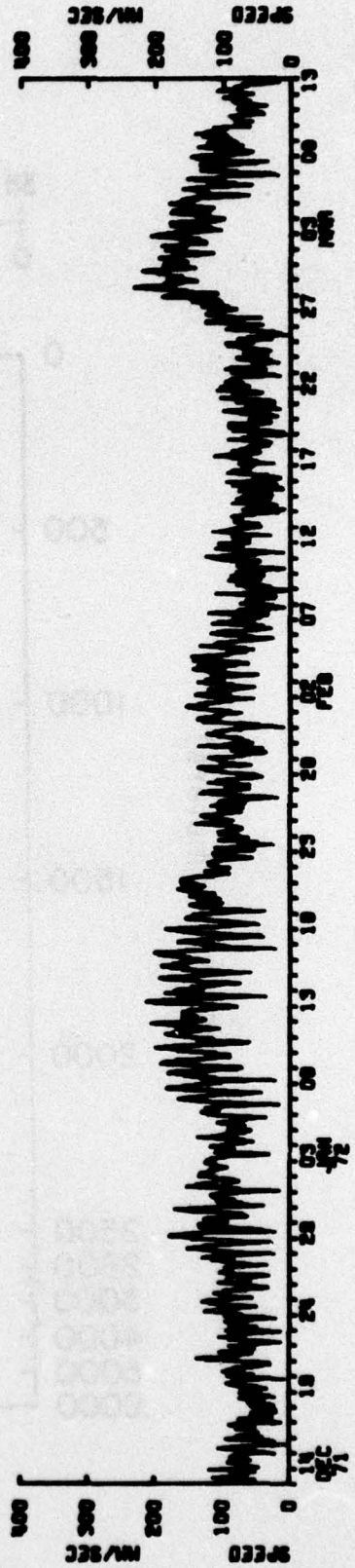


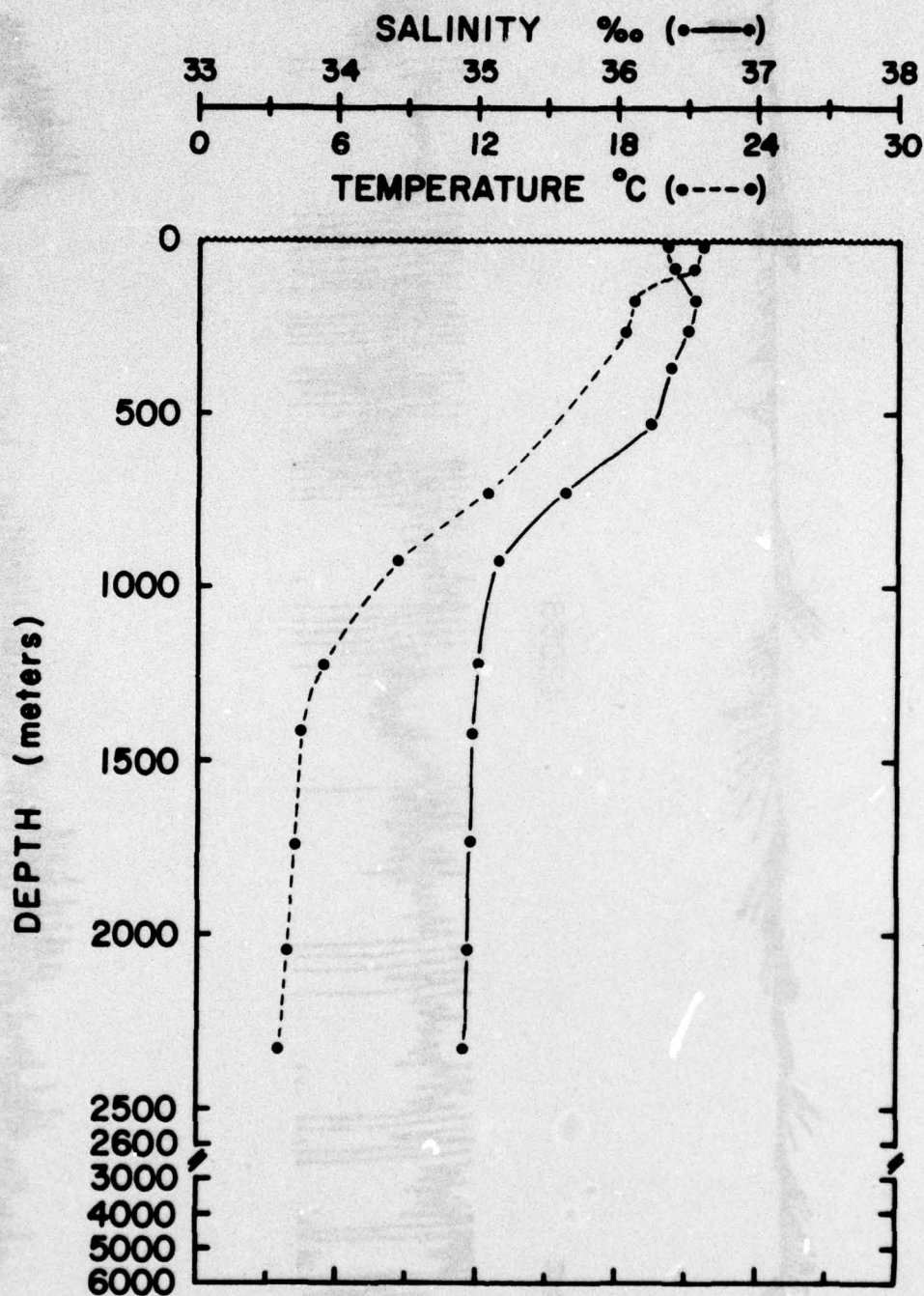
NORTH
↑



100 MW/SEC

42068





AN - 066 - 1860

LAT. 35° 56.5' N

LONG. 70° 31.0' W

DATE 71 - 12 - 13

MOORING NO. 421

Lat. 35° 58.3'N Long. 70° 29.0'W

Set December 13, 1971

Set by J. Gifford

Ship R.V. Atlantis II Cruise 66

Recovered March 14, 1972

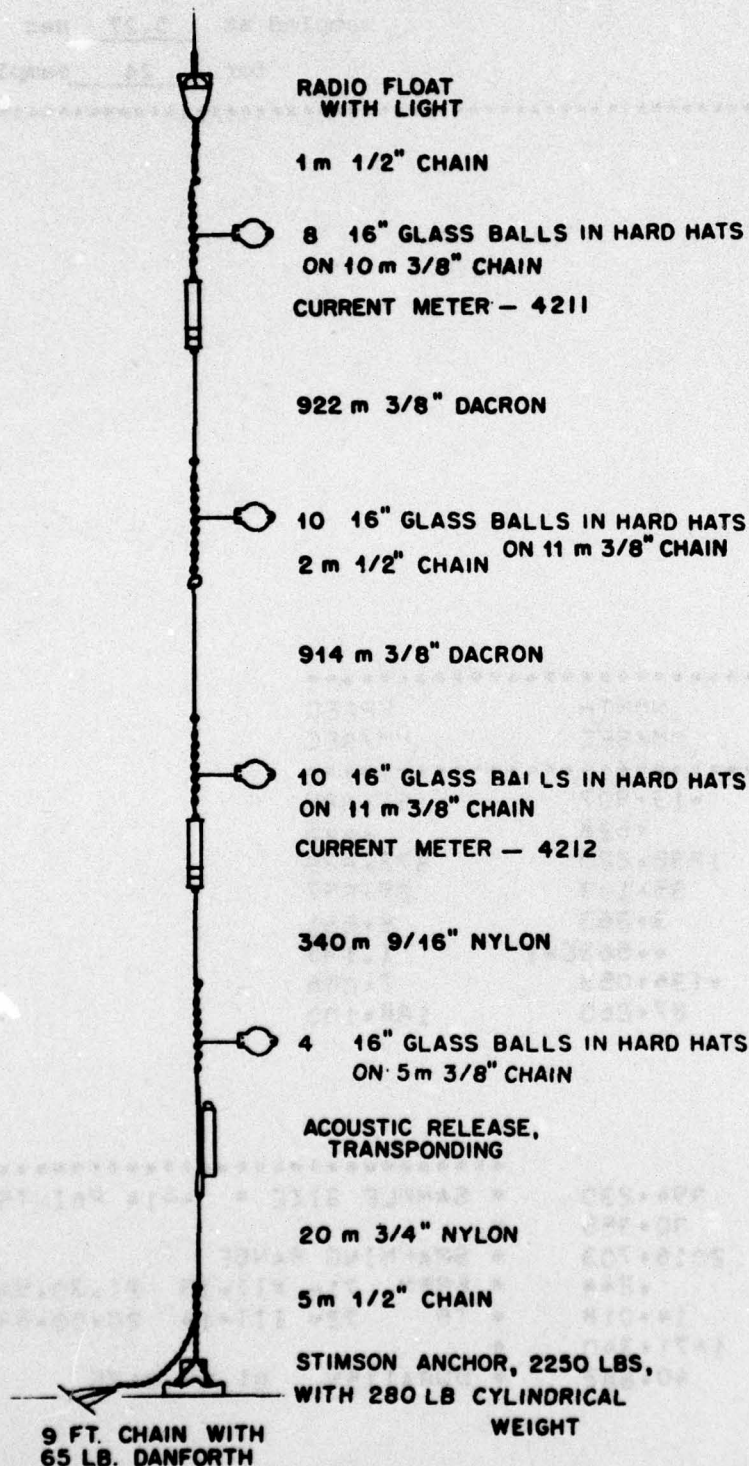
Recovered by D. Moller

Ship R. V. Chain Cruise 103

Mooring type - Intermediate

Purpose of mooring

Current measurements at Site J



Data No.	Instr. Type	Depth (m)
4211*	Model 850	2000
4212	Model 850	3990
Water depth		4440

Comments

DATA NUMBER 4211

Instrument no. M-173

Inst. depth 2000

Float depth 1989

Water depth 4440

Instrument sampling scheme

VACM accumulated averages every sec

X Model 850 data bursts every 1800 sec

sampled at 5.27 sec

for 24 samples

COMMENTS

DATA/ 421101800

VARIABLE * EAST NORTH SPEED
UNITS * MM/SEC MM/SEC MM/SEC

MEAN = -1.763 -13.907 51.629
STD. ERR. = .691 .528 .445
VARIANCE = 2117.461 1232.220 873.639
STD. DEV. = 45.940 35.103 29.557
KURTOSIS = 3.374 3.265 4.561
SKEWNESS = -.708 -.563E-1 1.133
MINIMUM = -166.319 -136.053 7.086
MAXIMUM = 112.182 87.260 188.100

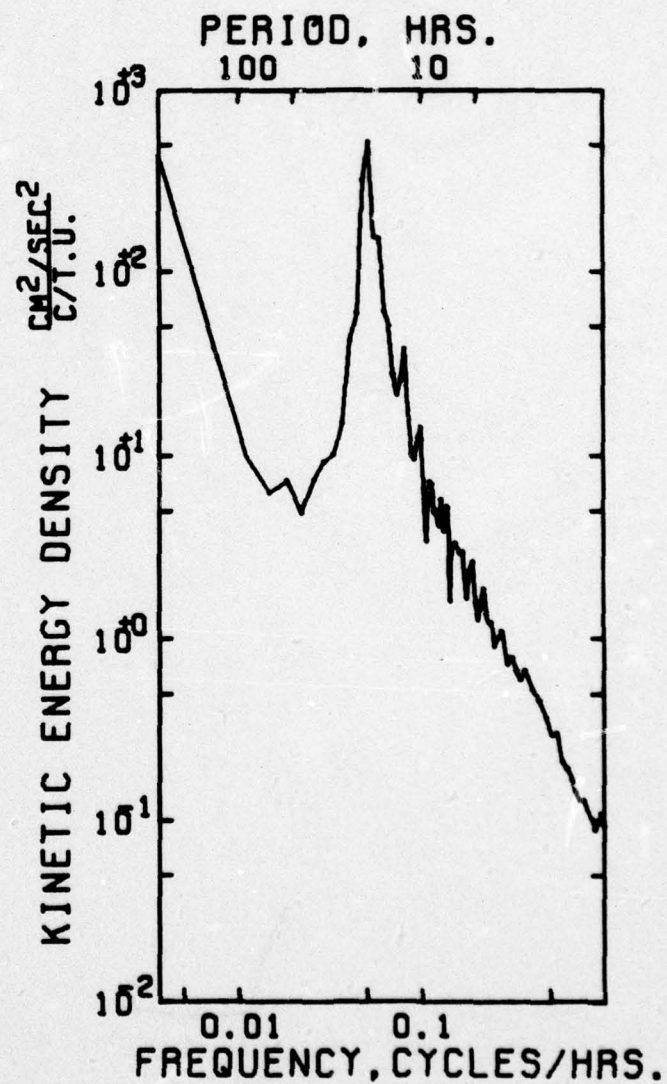
EAST & NORTH

COVARIANCE = 394.230
STD. ERR. OF COVARIANCE = 30.355
STD. DEV. OF COVARIANCE = 2016.703
CORRELATION COEFFICIENT = .244
VECTOR MEAN = 14.018
VECTOR VARIANCE = 1471.340
VECTOR STD. DEV. = 40.882

* SAMPLE SIZE = 4414 POINTS
*
* SPANNING RANGE
* FROM 71- XII-13 21.30.53
* TO 72- III-14 20.00.53
*
* DURATION 91.94 DAYS

BEST AVAILABLE COPY

AUTO SPECTRUM
 421101800 EAST COMP
 421101800 NORTH COMP
 2000 METERS
 71-XII-13 TO 72-III-14
 1 PIECES WITH 2187 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



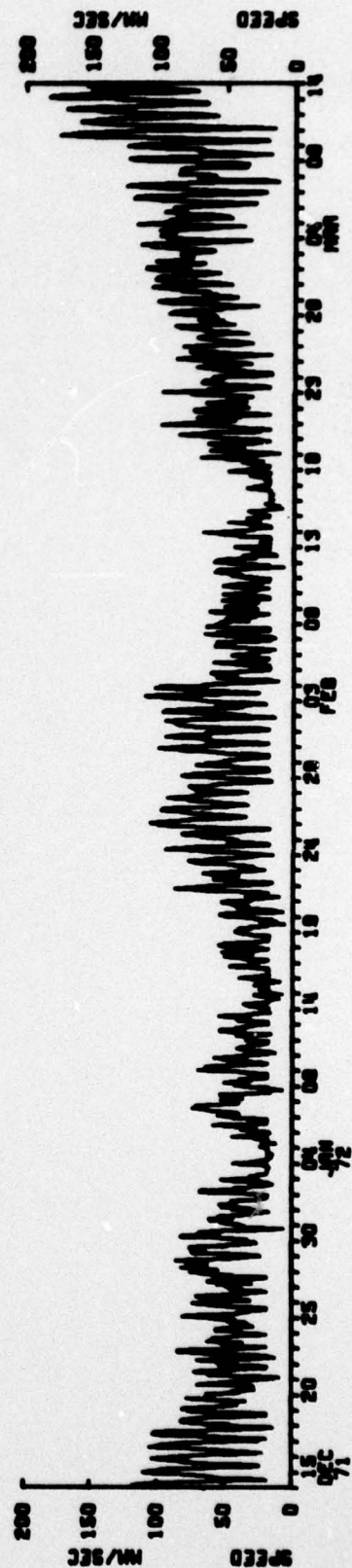
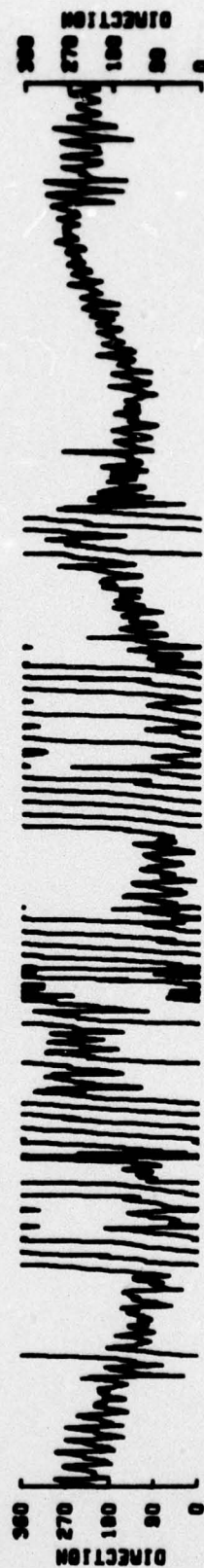


WORTH



50 MM/SEC

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